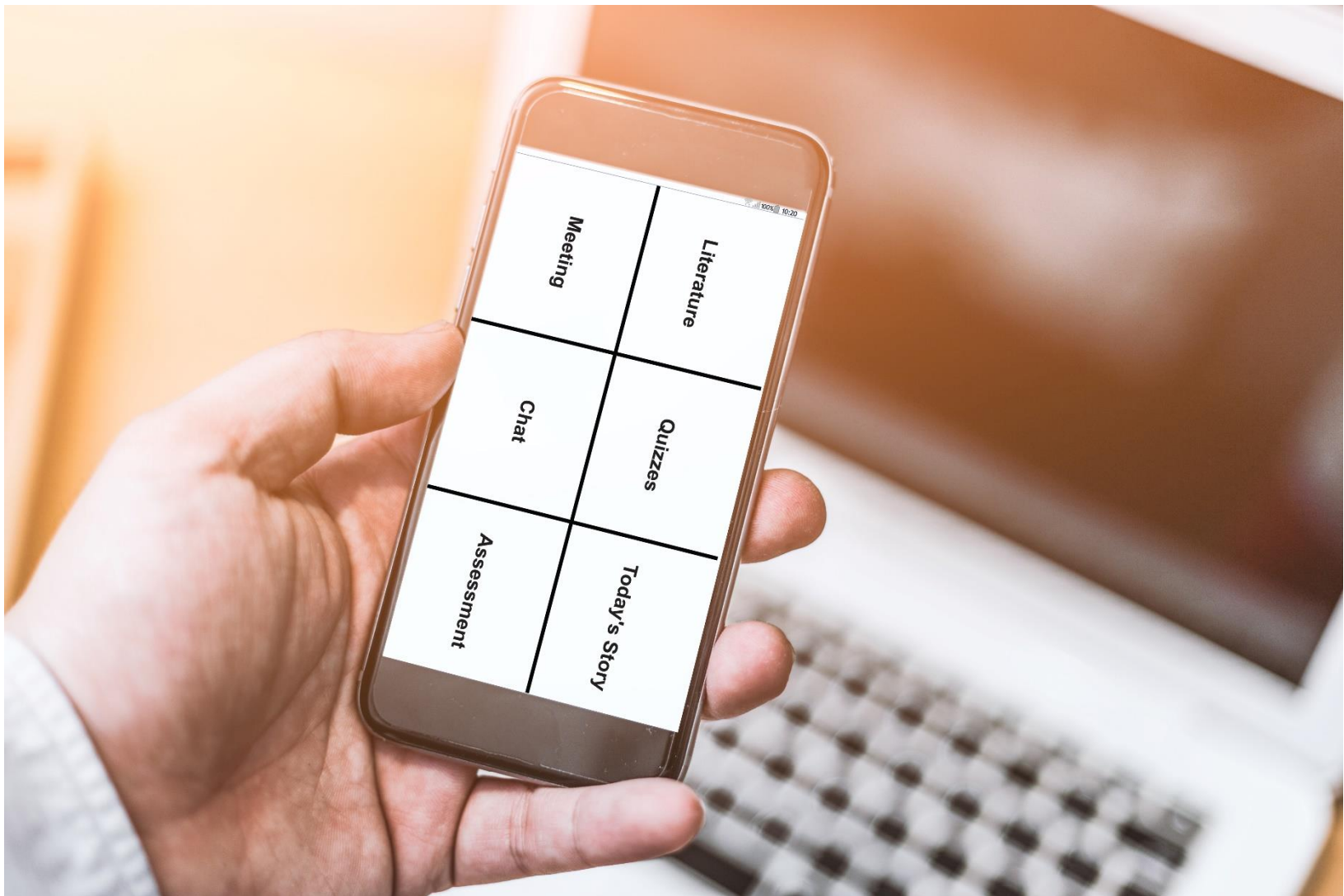


Mobile game impact on the behaviour



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“There are people all over this world dying of our disease. And believe it or not, we are truly the only people who can really help them. Let’s never forget that you and I have been given through illness, through suffering and through disease a talent for helping other human beings like ourselves.”

(Kinnon, 1974)

Co-founder of Narcotics Anonymous

Abstract

This report describes the purpose of forming a mobile game to be played by Narcotics Anonymous members, more precisely recovering addicts, to be strong in their recovery, to divert their thinking during the craving timeframe, and build a community to support one another during their recovery process. The design-based research enhanced both practical and theoretical framework to conduct the analysis and to develop the theory-driven design. In addition, the theoretical framework provided a detailed understanding of each action that happened inside each section, and the choice of rich methodology paved the way for identifying, analysing requirements and developing the solution. The solution is motivated by the theory of the community of practice, which enabled Narcotics Anonymous tradition steps and meetings with the aim of facilitating the conversation between Narcotics Anonymous treasurers, recovering addicts and among recovering addicts. Furthermore, the solution is the aim to facilitate recovering addicts at a high level to provide them with what they need in order to gain positive outcome(s). By doing so, through a popular relatable medium, namely a mobile video game, recovering addicts should be able to divert their attention, be motivated to health promotion in order to support recovery process and build a community to support one another.

Keywords:

Craving, Divert Attention, Recovery, Recovering addict, Co-design, Activity Theory, Community of Practice, Health promotion, Literature, Meeting. Quiz

Reading guidelines:

- All figures in this report are embedded with hyperlinks that will allow the reader to view figures on high-resolution if the reader of this report finds difficulty in reading the text within the figure. By clicking on figures, the reader will gain access to the high-resolution figure and can easily navigate to text to read easily.
- While reading this report, the reader will constantly find references to the chapter(s), section(s) or subsection(s) e.g., see section alongside with allocation number. While reading .pdf extension file this kind of text within parenthesis is embedded in hyperlinks. This has been done to provide the reader ease to navigate back and forth the above mentioned or about to come statements.

Contents

1. Introduction	1
2. Significance	3
3. Research Design	4
3.1. Design-Based Research	4
3.1.1. Context	5
3.1.2. Lab	5
3.1.3. Experiment	5
3.1.4. Reflection	6
4. Problem Statement	7
4.1. Research Questions	7
4.2. Term Definition	8
4.3. Study Limitations	9
5. Literature Review	11
5.1. Prescribed and Illicit drugs' side-effect	11
5.2. Addiction, Rehabilitation and Recovery	12
5.3. IT potentials and obstacles	13
5.4. Digital Games' potential	14
5.4.1. Game-based learning	14
5.4.2. Games for health	16
5.4.3. Game-based behaviour change	18
5.4.4. Games for change	19
6. Theory	21
6.1. Activity theory	21
6.2. Community of Practice	26
7. Methodological framework	31
7.1. Qualitative Research Method	31
7.1.1. Ethics	32

7.1.2.	Data collection Limitations	32
7.1.3.	Reliability, validity, generalizability	33
7.1.4.	Semi-Structured Interview	34
7.1.5.	Narrative procedure	38
7.1.6.	Analysis of narratives within RQ1 and RQ2 domain	58
7.2.	Designing Method	60
7.2.1.	Co-design	60
8.	Design	66
8.1.	Design process	66
8.1.1.	Identifying the participants	67
8.1.2.	Arrange a place and necessary supplies	68
8.1.3.	METHODS TO EFFECTIVE CO-CREATION SESSION	69
8.2.	Development of the first prototype	87
8.2.1.	First prototype	88
9.	Discussions	95
9.1.	Future work	98
10.	Conclusion	99
11.	References	103
12.	Appendix	117
12.1.	Consent Forms	117
12.2.	Academic Officer Consent	117
12.2.1.	NA Consent Form	118
12.2.2.	Participant signed Consent Form	119
12.3.	Interviews	121
12.3.1.	Interview 1:	121
12.3.2.	Interview 2	134
12.3.3.	Interview 3	147
12.4.	ILDs in Pakistan	168
12.5.	Mobiles phones in Pakistan	168

12.6.	Narcotics Anonymous	168
12.6.1.	NA Meetings:	169
12.6.2.	NA Traditions:	169
12.6.3.	NA key steps	170
12.7.	Design Heuristics	172
12.7.1.	Design Rules	172
12.8.	Search Strategy	174
12.9.	Timeline & protocol	176
12.10.	Budget	179

1. Introduction

This research will deal with illicit drug (henceforth will only write ILD) addicts of Pakistan, a country that is worst and most affected by ILDs in all Southern Asia (see Section 12.4: ILDs in Pakistan). Corruption, the lack of the cohesive approach at government level and concern institutions (Drug Situation in Pakistan Counter Narcotics Achievements, 2010), and lack of education (Federal Minister for Narcotics Control, 2012) are major factors. These factors result in endangering destinies of the people of the country who are blindly destroying their lives and hindering the growth of healthier communities (Drug Addiction in Pakistan | Substance Dependence | Substance Abuse., n.d.). According to the report (Drug use in Pakistan, 2013), people aged 15 to 64, 0.8% of the population, are regular heroin users, 0.3% opium, and 1.0% are using opiate. It is worth mentioning that the 76% of opiate users want help to quit taking ILDs (Drug use in Pakistan, 2013).

NA is an international organization that also operates in three big cities of Pakistan namely, Karachi (a populous city, economic hub), Islamabad (the capital city), and Lahore (2nd largest city, an educational centre and a populous province capital) where addicts from different areas of Pakistan are welcome to join NA ILD preventing program. The NA community-based program offers a 12-key step model, closely monitored by NA trusted servants, NA treasurers, even medical professionals and social workers to help the addicts to reach an ILD-free life (Walker & Wood, 2003). According to client (NA Pakistan) rehabilitation process and recovery varies according to the type of addiction. In addition, some recovering addicts (henceforth will only write RAs) because of their weakness in recovery and feeling of powerlessness, they relapse and became addicts again. However, some relapsed re-join the recovery programme either by embarrassment or by force by the family members. Despite the NA 12 key step model behaviour therapy, this is the evidence that the RAs crave during and after the recovery process because they lack the crave management tool that should not only be available but also have potential to divert their attention during craving timeframe.

The ubiquitous presence of the smartphone(s) is a popular relatable medium. Since the technological revolution of smartphones (2007) and tablets (2010), first-time mobile games took a larger share than PC games globally (Newzoo - Global Games Market Report, 2016). Therefore, captivating and engaging nature of the games is a reason of a mobile game which has been selected as a tool to gain benefits e.g., make them stronger in recovery, divert attention during craving timeframe and build a community to support one another recovery. Captivating and engaging nature of the game might lead to change in the behaviour and motivate them to engage in activities to divert attention and enable them to build a

socialised environment where they can learn and help one another. A digital game is a popular form, which gains its popularity due to its ability to record events and teaches certain morals that engage the public to make social and even healthy choices (Grimes, et al., 2010).

It is worth mentioning there is a little number of mobile games development which could be useful during the crave timeframe and to build a community to help one another. In any case, this provoked my main aim of this report, providing a means for getting stronger in recovery. Since main domain, data within Pakistan context lacks, in order to obtain comprehensive knowledge about RAs and their recovery and what motivated them to relapse, I gather data to capture those elements that drag a recovery addict back to the addiction. To provide RAs according to their desires needs identified through research methods, related solutions, scientific articles, all of which should provide support in developing a mobile game that should accommodate specific purpose of diverting attention, health promotion and built a community that can learn and help one another.

2. Significance

On Pakistani official level (e.g., Illicit Drugs Control Division (Narcotics Control Division, u.d.)), studies on ILD use in Pakistan, the addicts' percentage alongside new addicts among the population is not valid. However, could be provided with the baseline information on the patterns and prevalence of ILD use. Furthermore, the available official report (Drug use in Pakistan, 2013) shows a very disturbing number of ILDs' dependents. Besides the validity of Pakistan's official report, news channels, NGOs (Anti narcotics Welfare Organization, u.d.), rehabilitation and society centers who researched privately claim that currently, these numbers are not only in millions but also signify the alarming rise of the use of ILDs among women (DAWN news, 2013).

Availability of these private reports is not accessible to common civilians for various reasons (e.g., NGO publishing new book). Since the valid data is lacking, in the limited timeframe it is not possible to present the percentage of those who joined the recovery program, completed their recovery and those who relapse or left the recovery pregame because of powerlessness front of craving and became addicts again. Craving can occur at any time by a cue, e.g., mood states, familiar surroundings or sign from another person at any place, different activities on different occasions (any celebration, social gathering), therefore, a craving management tool should be available on any craving timeframe (Ploderer, et al., 2014).

Pakistan is one of the largest smart mobile phone consumers (Smartphone Usage in Pakistan [Infographics] | Pakistan, n.d.) (see Section 12.5: Mobiles phones in Pakistan). However, besides the facts that not only the youth are most likely to download health-related apps but also most intense users (Eysenbach, 2015), but there is very little work on which a tool to manage cravings and change in behaviour could be used. Furthermore, the literature review (see Section 5.4: Video games' potential) clearly indicates the support for the idea of developing a well-designed mobile game as a powerful learning environment (e.g., (Tallim, 2004)) in comparison to a web-based video game.

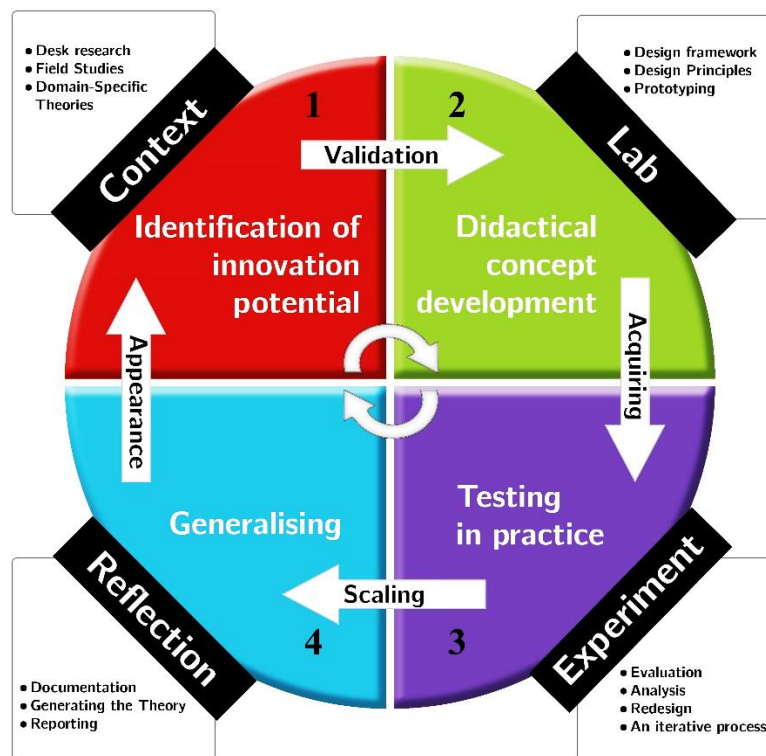
As Read and Shortell (2011) argued, opportunities for health-based mobile games are knocking on the door as the culture of gaming remains an emerging trend. Thus, I am focusing on developing a mobile game that could be used as a tool to support the recovery process, change in behaviour during a craving timeframe. The client (Narcotics Anonymous, Pakistan) and literature (e.g., Huen, et al., 2016) highlighted a loophole of society process, maintaining that there is no guarantee during recovery process one can relapse or a recovered one can follow-up the ILD. This indicates that the craving management tool should be readily available at any time of need, which gives my research the core significance.

3. Research Design

In this chapter, I will show the reader how the research is conducted. This chapter will introduce my research design, approach from an initial problem statement to data collection and design methodology, from which I will carry out iterative process, discussion, and future development and the conclusion. However, because of study limitations (see Section 4.3: Study Limitations), test to bring improvement to the specific design was not possible, therefore, will be provided an improved design on thesis defence.

3.1. Design-Based Research

Design-based research (DBR) is a broad research approach that generates new knowledge through processes that simultaneously develop, testing and improving a design. DBR has proven effective in ‘*learning design*’, ‘*educational design*’ and ‘*learning design*’ project processes, therefore, DBR is chosen. Furthermore, DBR model (DBRm) will be used as a framework for the study. Gynther’s (2010), DBRm consisting four-phase (See Figure 1: DBR Model) innovation which is to gain knowledge about the design through the development of the specific part. These four phases of the model are as following *Context*, *Lab*, *Experiment*, and *Reflection* (Christensen, et al., 2012).



3.1.1. CONTEXT

The first phase of DBRm is ‘*Context*’ (*Problem Identification*) (Christensen, et al., 2012). The DBR project in a given learning context which always starts with mapping an analysis of identifying problems. This phase can be described as the ‘desk research’, where I developed the problem statement, the research questions, a different type of observation, collect empirical data and selected the most relevant theory. To identify the problem, I had a formal meeting at NA (Lahore) and carried out the analysis of the relevant available literature (see Section 5.1: Prescribed and Illicit drugs’ side-effect and Section 5.2: Addiction, Rehabilitation and Recovery). Furthermore, in this phase, I will also provide the description of the selected methods which is the qualitative method, prototyping, Use case. However, in order to bring ease in reading and navigate the expanding volume of sub-sections within context phase, these sub-sections will be divided into smaller chapters and sections. In addition, on earlier before starting, any chapters and sections I will drag reader’s attention to that are under context phase.

3.1.2. LAB

The second phase of DBRm is ‘*Lab*’ (*Development of didactic solutions* (based on existing design principles and technological innovations)) (Christensen, et al., 2012). In this phase, I will utilise the knowledge gained during DBR context phase. In this phase I aimed to answer RQ3 (see Section 4.1: Research Questions), with the domain-specific knowledge to design framework, design heuristics, and based on a design methodology will develop an initial prototype(s).

3.1.3. EXPERIMENT

The third phase of DBR model is ‘*Experiment*’ (*Intervention*) (Christensen, et al., 2012). This phase primary focus is on experiments in a real setting. Furthermore, by evaluation, analysis and improvement in the prototype(s) in this phase, I will conclude whether or not the prototype concept can go from a sketch to a feasible, valid and effective solution. However, because of limitations set for this study (see Section 4.3: Study Limitations), experiment phase is exempted from this study.

3.1.4. REFLECTION

The fourth and the last phase of DBR model is ‘*Reflection*’ (Generalization) (Christensen, et al., 2012). In this phase, I will make conclusions on the prototypes context alongside how robust the design is compared to another context. In this phase, additional documentation will be also provided e.g., study timeline, a budget that will be available in Appendix with additional detail (see Section: 12.9: Timeline & protocol and Section 12.9: Budget).

4. Problem Statement

This chapter is a part of DBRm's 'context phase' (See Section 3.1.1: Context). Based on the above description of the problem area (See Chapter 1: Introduction & Chapter 2: Significance), I have developed the following statement:

“How a game should be designed to change recovering addicts’ behaviour, motivate to health promotion, in order to support recovery process and build a community to support one another.”

4.1. Research Questions

In order to address this main problem statement, I have created reachable research questions, which are:

RQ1: What reasons force the RA to try ILD?

For this study, it is important to know what reasons cause/force recovery addicts to relapse to ILDs. After collecting those consequences, it is also important to know what type of ILDs the RAs choose during powerlessness timeframe. In addition, which ILD(s) is highly common in satisfying respectively that discourages RAs from pursuing the recovery process, set up meetings, and motivates to relapse that leads to the addiction once more.

RQ2: Which ILDs are the RAs more likely to use to get satisfaction during powerlessness timeframe?

In order to know what ILDs, RAs more likely to adopt, a fair amount of literature and interviews with the RA will conduct. After vetting the information about those ILDs the RA individually choose to satisfy during powerlessness timeframe, my next step will be to gather information that might play a crucial role during the development of the game or games’ scenario.

RQ3: Which elements are required to build a game to motivate addicts to health promotion and engage in their environment in order to changes their behaviour during powerlessness timeframe?

After gathering this information my next step will be to investigate those elements, a digital solution for RAs should contain. This solution must not only engage the player in its attractive environment to divert attention but also should be motivating players to promote their health and build a virtual community to help one another. In order to do so, a critical analysis of the relevant available research literature on

different health-related games e.g., health promotion, behavioural change, enhancing mental development, will be reviewed in order to gain insight. Furthermore, the choice of theories and methods will best support to shape this study and to accomplish the goal of this study.

4.2. Term Definition

Drug: Other than food, any organic/chemical substance recognised in the nation pharmacopoeia meant to use in the treatment/diagnosis, to the prevention of disease, cure or to enhance the physical or mental well-being.

Illicit Drug: Any organic/chemical illegal or without prescribers' permission substance meant to effect the function of the body use and causes addiction.

Addiction: The habitual need for a substance known by the user to be harmful categorised by tolerance and by well-defined physiological symptoms upon withdrawal(s).

Recovery: The word recovery has been widely used but there is no complete agreement on the definition. In this study recovery is defined as a new sober and fruitful maintained lifestyle (Schwarzlose & McLellan, 2007).

Recovering addict: Any addict who is meeting regularly to share learn how to live without ILDs and to help each other to stay clean. However, it is worth mentioning there is no model of the RA (Narcotics Anonymous, 2008, p. 91).

Recovered addict: Any RA who has stopped the use of the ILD(s) and convinces others to leave the disease of addiction can be called recovered addict. As literature suggested and NA suggested that no one could say I am a recovered addict, Recovering addict is never recovered; it is always going to be back there (Laudet, 2007).

Mobile game: Mobile game is an electronic game designed in various colour for smart mobile device i.e., smartphones. The mobile game has been widely used but there is no complete agreement on the definition. In addition, literature also lacks to provide a perfect definition of a mobile game because there is a few narrow/ blur split between the mobile app and mobile game, however; mobile game contains features, platform, connectivity and graphics. According to (Jeong & Kim, 2007) mobile games are narrowly defined and generally referred as; the game is played in a handheld mobile device with network (wireless communication) functionality.

4.3. Study Limitations

While living abroad (Denmark), for nearly two months it was not possible to physically meet participants, therefore, most popular IM applications in Pakistan (PKKH, u.d., s. n.d.) i.e., 'WhatsApp' (About WhatsApp) and 'imo' (imo - free group video calls, n.d.), have been chosen to conduct the interviews.

All interviewees are from the same city but different districts, who visit the same NA meeting point. Therefore, there is a possibility that they shared some characteristics and may build their own common, CDes, methods or behaviours.

Participants for the co-design (CD) were from the same NA meeting point, but their status within the NA premises varies. Any literate person who showed interest to participate was welcomed, however, because of weather (40 – 46 °C [29 May - 23 June 2017]), limited activities during the month of Ramadan (*Islamic holy month of fasting*) reasoned to work with the remaining two participants who showed their interest. During the CD method, the NA trusted member denied the request of video recording. However, after providing sureties that material will be only visible to the examiners of this study, permission to record audio and take some pictures was granted. In addition, picture(s) could be added in the documentation, but identification of participants will be a blur (blur face) to ensure anonymity.

It is worth mentioning because of their limited availability of participants usability of the developed iteration was not possible within the timeframe of this study. Therefore, the decision has been made to conduct usability test after Ramadan and results of the usability and improved design (second iteration) will be provided on thesis defence.

The decision has been made not to include CD participants (CDPs) in the usability test. Since they took active participation in designing and aware of steps/feature, they might not provide fruitful knowledge during the usability test. These participants could be from those who were interviewed or were unable to participate due to their busy schedule during the CD process because of mentioned above reasons.

Participants' limited availability took a large segment of study's fixed timeframe therefore before submission date usability test was not possible. Therefore, after the month of Ramadan will conduct usability test and results of the test and improved design (second iteration) will be presented on the thesis defence.

NA treasurer strongly advised not to include any NA logo, badges, the button in the design. If requires using must carry permission from NA main head office (California, USA).

The study timeframe was only 115 days ([February 28, 2017, to June 23, 2017] weekends and official holidays are included). Because of the study limited timeframe to conduct the study, it was not possible to learn how to develop a fully functioning game, therefore, prototyping method is selected (see Section 7.2.12: Prototyping) to see the outcome of the RAs or other members of the community e.g., NA treasures.

5. Literature Review

This chapter is a part of DBSm's '*context phase*'. In the following chapter, I will present related work on ILDs, addiction, rehabilitation and recovery, ILDs impact on health and behaviour. This chapter includes professional and popular scientific articles, and academic material to obtain knowledge within the field and to find inspiration for a tool to change behaviour, reduce anxiety and provide emotional support, as well as motivated to engage in healthy activities, during recovery and most importantly during a sudden craving timeframe.

5.1. *Prescribed and Illicit drugs' side-effect*

The general perception is that the use of the ILD is motivated by 'hedonism' in order to seek pleasure (Katz, et al., 2007). ILDs are enormously addictive, once one gets addicted; it is not easy to quit (Schelling, 1992). Moreover, in order to alter their mood most commonly, teens and adults get ILDs from their friends and family (Freeman, et al., 2011). Furthermore, as compared to women, most age groups of men are more likely to use most of the ILDs (non-prescribed/ILD) (Samhsa, 2014). However, women use more prescribed drugs (Ailes, et al., 2015) and are more likely to overdose or misuse (used recreationally, illegally) (Walker & Wood, 2003). According to (Riley, et al., 1998), women with increasing age are more sensitive to pain e.g., more likely to experience chronic pain (Gerdle, et al., 2008), which could give rise to the use of prescribed opioid to cope with the pain(s) (Ailes, et al., 2015). Furthermore, in terms of self-treatment of other problems e.g., tension or anxiety (McHugh, et al., 2013), the results might be the misuse of prescription opioid which leads to addiction or overdose with very serious consequence e.g., difficulty breathing, heart attack or dies while using, convulsion, higher rate death from overdosing (Martins, et al., 2015).

According to Sutker, et al., (1981) both genders have similar motivation towards ILD abuse, however, Mendrek and Fattore (2017) study results differ and argue that among males and females not only motivation towards ILD abuse, but also their choice of ILD is different (UNODC, 2016). However, in advanced countries (e.g., European countries, USA) the gender gap is narrower than among adults (UNODC, 2016). ILDs not only have several side effects on the body, but they also change mood and behaviour causing (Walker & Wood, 2003) e.g., anxiety, restlessness, feeling of anger, mood swings, etc., (Stalcup, 2007).

Addicts of ILDs e.g., Marijuana, Hashish and opiate rely on tobacco to inhale in their body. Tobacco in form of cigarettes alongside with other toxic metals is a rich source of nicotine, which is the main

chemically addictive substance. Nicotine is a poison in a large quantity (Schelling, 1992) e.g., in different brands of the cigarettes percentage of nicotine ((Rehman, et al., 2014) (Moore, et al., 1967)) and toxic metals vary ((Afridi, et al., 2015), (Ahmad, et al., 2011)). Comparatively to other ILDs, cigarettes are socially acceptable and smokers smoke more when they are partying or feeling tense and nervous (Silverstein, et al., 1977). These dominant factors make it hard to stay away from ILDs, therefore, leave a large impact on health care costs (Volpp & Galvin, 2014), as well as death in developed countries worldwide.

5.2. *Addiction, Rehabilitation and Recovery*

Addiction is a disease, which can be described as a '*pleasure generating chemistry of the brain*' or phenomenon 'denial' (e.g., refusal to acknowledge out of control use) (Stalcup, 2007). Furthermore, the daily symptoms of this disease are craving. During the active chemical pathway, addicts yield a feeling of pleasure and well-being to serves reinforce behaviours (Stalcup, 2007). However, there are two types of reinforcement 'negative and positive' which play crucial roles in the development of the behaviour of the people with addiction. Craving that is too uncomfortable or too severe which temporarily blinded the addict to the risk results in loss control over behaviour resulting decline to use of the ILDs that leads to serious consciences (e.g., overdose death) (Stalcup, 2007). It is worth mentioning, that level of craving in women is high than men ((Fox, et al., 2014), (Hitschfeld, et al., 2015)), where separated or divorced women have more problems than women who are married (Wilsnack, et al., 1994).

Furthermore, few studies also highlight that as result of regular narcotises exposures consequences e.g., brain mental illness including learning disability are higher in women than men((Medina, et al., 2011). Higher level of craving is a major effect of the changes and produce feeling of anger, boredom, mood swings, anxiety, depression, restlessness (Stalcup, 2007) and even in the face of negative consequences e.g., conflict with family, social boycott and poor grades((Butters, 2005), (Walker & Wood, 2003)). Therefore, addicts seek recovery by enrolling in various treatment program e.g., detoxification and the behaviour therapy program (Walker & Wood, 2003).

Usually, patients set their goal for recovery, and rehabilitation or social centre to send them back to normal life paid employment and freedom of activities in the daily living (Guthrie & Harvey, 1994). Maclean et al., (2002) argued that motivation is the key to recovery and plays the key role in determining outcomes. Motivation can describe as an inner urge that prompt to actions (Adelman, et al., 1998) or an inner quality and personality of the individual patient (Maclean, et al., 2002). According to Michael et al., (2010) behaviours that are independently motivated are the stronger proctors of the treatment outcome

and in health related problems e.g., drugs and alcohol and smoking been shown a positive impact on treatment outcome (Ryan, et al., 1995).

However, in the case of motivation interception, lack of encouragement, feeling of self-blame can occur in the case of incomplete recovery that can negatively affect the quality of life even after completing the recovery phases (Maclean, et al., 2002). External or social factors, patients' behaviour can also affect their motivation (Simoneau & Bergeron, 2003) and lack of motivation is cited by the therapists and clients as the main reason for failing from treatment (Ryan, et al., 1995) and motivation's assessment should be done more than one (Kludt & Perlmutter, 2012). Therefore, recovery professional use techniques e.g., close rapport, day-to-day assessment and chat about their lives in order to enhance motivation (Maclean, et al., 2002).

5.3. IT potentials and obstacles

Information technology (IT) holds the potential to improve the organisational efficiency, patient safety within healthcare (Poon, et al., 2009) and can encourage people to engage in healthy living (Grimes, et al., 2010). IT important facilities are communication technologies that have brought people closer to each other. Since the technological revelation of smartphones (2007) and tablets (2010), the mobile game industry is rapidly growing. According to Michael D. Gallagher (CEO of the Entertainment Software Association);

“Over the last year, the video game industry has prospered as games continue to not only alter the entertainment landscape but change business, sports, arts and education”.

(ESA Annual Report, 2016, p. 3)

However, IT use is an obstacle when developing the system, because of poor usability is hard to learn and to complete tasks in efficient manners (Ong, et al., 2016). The concept of the system that implies the identification of future development importance develops outside of the health sector with brief descriptions of potential technologies. Except for their primary purpose, other groups could also take advantage of the information (Banta, et al., 1987). Therefore, evaluation of health IT application should be a priority to perform tasks effectively because the developed application continues to be challenged (Poon, et al., 2009) as well as patient safety, the risk of data breach, and cyber-security (Ong, et al., 2016).

5.4. *Digital Games' potential*

Several types of research have been selected to get inspiration, how other researchers have utilised the potential of the mobile phone in terms of motivation for learning, enhancing mental health (Game-based learning), engage in health-related activities, changes in behaviour, and impact on social change.

5.4.1. **GAME-BASED LEARNING**

Learning by playing the game is becoming increasingly popular which is embedded with the game-based entertaining power element to motivating or engaging learners to reach their educational results (Huen, et al., 2016).

Huen, et al., (2016) research is an investigation to see the enhancement of youth mental health by engaging in internet based digital game-based learning (DGBL) 12 weeks (45 minutes per week) program. In this research for the first module of DGBL, 498 students from 33 local secondary school participated. Students achievements were evaluated on their psychological conform and engagement of each of the modules. The result of this study supported the findings in the previous studies and theories. Total 192 participants completed all eight modules and suggested an enhancement in their psychological well-being. Huen, et al., (2016) provided evidence that the internet; implemented digital involvement of DGBL alongside with technologies involvement could enhance the mental health of the youth. Since this study was conducted in 2016, this study could use as an inspiration to have an idea development of the modules, and how results were evaluated in order to see the outcomes.

The most dominant advantage of electronic games is their extremely captivating and engaging nature (Malone, 1980) could be combined with educational contents and objective (Prensky, 2001). Furthermore, by including setting e.g., the game in the fantasy environment, scenarios that activate curiosity, allowing players to discipline their action and assigning tasks carriage player to complete which may influence the game to motivate the players towards learnings (Huen, et al., 2016). According to several authors (e.g., (Gee, 2003), (Tallim, 2004), (Salen, et al., 2008), (Akkerman, et al., 2009), (Wijers, et al., 2010)), game-based learning can be more interesting, enjoyable, effective than the traditional learning.

Wijers, et al., (2010), studied engagement in mathematical activities through a location-based game with mobile handheld technology (HHT) with design game called MobileMath. With 60, (12-14 years old) different secondary participants, researchers were tested MobileMath usability and chances for learning on three different groups. Results of their investigation suggested that participants enjoyed playing the game and were highly motivated and indicated that they learn to use GPS, read a map. This research can

be used to in the project to give a fruitful idea on how researchers gathered the data through participants' observation, online storage, and interviews with teachers, students, and online survey well. However, the problem with their study is that their study suggests further investigation as MobileMath can contribute further to participants learning. Since this study was conducted in 2016, second report results are lacking to see the outcome. However, in the same context of Wijers, et al., (2010), Fishman, et al., 2013 also argued that through digital game's ever-increasing challenges, players could learn, motivate and facilitate their engagement.

One of the advantages of the electronic games is that it can support problem-based learning; also activates the prior knowledge that they must use that information in order to advance (Oblinger, 2004). Karakus et al., (2008), investigated favour game genre among male and female, an aspect of the game they do like, effects on players behaviour, and their insights about the educational importance of computer game. In ten different cities high schools, where they distributed 1224 questionnaires that were administrated by computer education teachers of these schools who received a guide to implementing the questionnaires, hints concerning the open-ended question but not to interfere students providing the answers. The students completed these questions, where open-ended question was analysed and assign codes. Results of this study 99% students used the internet, where 72.1 % users used internet to access information, 70.6% to do their homework, 49% to chat, and 39.7 % played 1-5 hours online game where male played more game than female and only 32.6% students used to send an email. Further findings of this research yield that because of entertainment, relaxation, improvement of thinking skills, to spend free time and for the social environment, they played the game. It is worth mentioning that half of the class (with no gender difference), especially in history and mathematic courses, agreed that games could be used, as well as to improve mental skills (Karakus et al., (2008)). However contrast to Karakus et al., (2008), Huizenga et al., (2009) study argued that mobile game not motivated to learning history, this could be due to short playing the game is not enough to have motivational effects.

It is worth to mention that, mobile technology is not for everyone (Sharples, et al., 2007) and as age increases (over age 50) the learning capabilities of people decline (Robbins & Judge, 2013). Robbins, & Jude, (2013), argued that due to limited experience of technology's usefulness, aged people have the doubtful feelings toward new technologies in their everyday life (Robbins & Judge A., 2013). Therefore, it could be time-consuming to aid, generate opportunities and become confident about using with new technology, as the basic learning motivation is required (Hao, et al., 2017).

As Mueller, F et al., (2007) discussed that games have the strong effect of bringing people together. Since the learning capabilities decline with age older people can be part of the community or can learn through

social interaction sites/clubs (see Section 6.2: Communities of Practice). According to Herz (2001), multi-player networked games have developed, which has paved the way for players for learning in the new collaborative model. As Simonds described health education as aimed at *“bringing about behavioural changes in individuals, groups, and larger populations from behaviours that are presumed to be detrimental to health, to behaviours that are conducive to present and future health”* (Glanz, K.Rimer, & Viswanath, 2008, s. 10).

5.4.2. GAMES FOR HEALTH

The term health promotion is the most recent source than health education (Glanz, et al., 2008), which could be found in various forms (e.g., mental health, health-related physical activities, health related awareness etc.). Electronic games hold potential for usually aim at increasing health promotion, physical activities and health-related behaviour (Papastergiou, 2009) and to encourage them to engage in healthy living ((Grimes, et al., 2010), (Hassandra, et al., 2015)).

Papastergiou, (2009), been use as a guidance of doing critical analysis alongside empirical evidence of the digital games as an educational tool in health promotion and physical education. Papastergiou, (2009), an overview of 34 relevant articles suggested that digital games not only hold potential as an educational tool in health promotion and physical education but also, motivate and enhance physical fitness, and may also improve adults’ knowledge, skills, and behaviours.

In order to prove positive outcome mobile application as a tool in health promotion activities, Chiu, et al., (2009) been selected. Since people of all age, do not drink recommended amount of water to keep body healthy and constant hydrate researchers developed a sensor based Playful Bottle system to actively remind or motivate users to drink sufficient amount of water regularly. Researchers also develop hydrations game name ForestGame, to remind and encourage drinking sufficient about of water on a regularly basis. Results of the ForestGame indicate that to take sufficient amount of water motivation might relate to enhancing people’s caring behaviour where they exchange hearts to meet social expectations. Consolvo, et al., (2008), finding also hold many similarities to (Chiu, et al., 2009), Consolvo, et al., (2008), measured the effectiveness of the mobile displays as means for improving awareness of daily life. For this purpose, they developed a UbiFit system with the stylish display to use in peoples’ routine lives over three months winter holidays. Results argued that participants who have awareness display, recognised the need to incorporate regular physical and varied activity and those who did not have any awareness display dropped significantly (Consolvo, et al., 2008). It is worth mentioning as technology is rapidly changing electronic devices and tools/gadgets that supplement the devices

alongside with their supportive applications, Chiu, et al., (2009) and Consolvo, et al., (2008) is old but highly relevant to the study. These can use during requirement generation and development process to encourage people to have physical and healthy activities during normal and especially craving timeframe.

Physical exercise has been merged into existing programs e.g., 'Quit4u' (Ormston, et al., 2015) and 'Give It Up for Baby' (Radley, et al., 2013) with promising results where researchers studied the effects of exercise on variables related to quitting smoking.

Radley, et al., (2013), evaluated the outcomes of quitting smoking and factors that are associated with success. Quit rates achieved by the scheme where 'Give It Up for Baby' quit rates the highest, 54% in four weeks because of their affluent areas. Result provided strong evidence that app as a support tool provide backing for people who are trying to manage craving (Haasova, et al., 2012) and engagements in physical activities help in managing cigarette craving (Hassandra, et al., 2015). There are plenty of potential mobile apps, which can be used as a support tool to self-help method ((Larkin, 2011), (Zahid, 2014)) manage craving during follow-up period (Bredican, et al., 2013) and motivation to initiate and keep to physical activities (Hassandra, et al., 2015). These provide solid contribution to reducing health-risk factors, cigarette craving, improve confidence and quality of life and reduction of health care costs (Hassandra, et al., 2015), however, supporting tool for RA is lacking in findings.

Sport video games, mock-ups of football, basketball tennis that allow the player to virtually participate in physical activities and perhaps serve as instructional tools (Kim & Kwon, 2007). It is worth mentioning Mueller & Agamanolis (2005), who developed the different type of fitness games that allow players to compete in planned physical activity sessions (e.g., playing a ball game) with remote third party players. On the daily basis such games record players' physiological data (e.g., heart rate) and physical activity which control their progress in the game ((Mueller & Agamanolis, 2005), (Grimes, et al., 2010)).

However, there are some reported negative consequences electronic games impact and self-reporting. Self-reporting can lead to the false reporting about attitude, behaviour and beliefs (Paulhus, et al., 1995) where tasks takers could take self-reporting differently, which can create doubt of validity and lead to unreliability (Goodstein & Lanyon, 1999).

Furthermore, negative consequences on young players' health as well e.g., provocation of seizures, social isolation, muscle injuries and promotion of aggressive behaviour (Gentile, et al., 2004), poor nutritional choices been important factor to decrease to take part in physical activities and rise of overweight and obesity((Caplovitz, et al., 2004), (Rosado, et al., 2006)).

5.4.3. GAME-BASED BEHAVIOUR CHANGE

Digital games seem to hold promises to make use of the entertaining power to educational purposes (Huen, et al., 2016), change in behaviour (Lavender, 2008). Lavender (2008), developed that the game (Homeless) to measure the effectiveness of the video game. The survey was answered to gather views towards homeless. Volunteers of surveys were requested to play a Homeless video game and read a story about homelessness. The survey was re-administered after two to answer with mix results. However, some indicators in the results showed the increase in sympathy towards the homeless by playing the role of a homeless woman some players. The fully functional video game is not within the domain of this study however, this study showed fruitful contribution in further study in the development of the questions for the interview, and further reading to understand RAs' emotions and behaviours.

Change in attitude, norms, expectations are related to the change in behaviour scale, however, it is worth mentioning that, society even tolerates if the behavioural consequences only hurt him/herself (Schelling, 1992). The behaviour of the player may not always represent the choice of the genre they like to play. According to Ferguson (2007), by playing violent games there are positive outcomes, e.g., better three-dimensional visual abilities, however, found no change in aggressive behaviour. Health-related behaviours e.g., create favourable attitudes and targets of entertainment education media striving for social change (Bandura, 2004). Regarding other behavioural approaches(e.g., the taxonomy of behaviour change interventions), little research is available, however, after quitting to avoid relapses intervention in support of any specific behaviour as being the most supportive, strong evidence is lacking (Hassandra, et al., 2015).

To provide support during IDLs carving timeframe, mobile games as a tool is lacking however, cigarette craving tools were chosen to do critical analysis was done to get inspiration that can contribute to this report. Therefore, 'Crush the Crave' and 'Lit to Quit' mobile games to quit smoking, have been selected. I included them by looking at the popularity (the study has been cited) among other researchers. Read & Shortell, (2011) tested "Lit to Quit" game on those people who were trying to quit smoking. In their solution, researchers provided smokers to puff into the microphone instead of a cigarette. Furthermore, "Lit to Quit" has two game versions that used a "rush" or a "relax" form of breathing that helped smokers to reduce cigarette desires. It is worth mentioning, the fair amount of research is available regarding behaviour approaches, however, after quitting smoke, most helpful to avoid negative behaviours, solid evidence is lacking, which can support any specific behaviour as being helpful (Huen, et al., 2016).

5.4.4. GAMES FOR CHANGE

In order to find sectors that can contribute to developing the game, Stokes, et al., (2007) hypothesised that digital games have potential to build awareness, mobilise and advancing positive social change, teach and train. After analysis of the focused elements i.e., unique, specifically important to social change they concluded that game and field of positive social change will evolve together (Stokes, et al., 2007). This research is old, however, could contribute to identifying solid steps e.g., mapping of the game to identify the existing needs, choice of best-suited method and analyse field and build strategies to improve game.

The primary goal of the game developers is that they want to raise awareness of their social issues and want to encourage engagement, interest and become more credible when it presents the issue objectively (Swain, 2007). Swain, (2007) study can be used as an inspiration as this study addressed the issues of the design, theory and social engagements that are relevant to this study.

Moreover, it is worth mentioning that digital games also hold few drawbacks, e.g., social isolation, the unstructured amount of time playing games (Ogletree & Drake, 2007), motion sickness (Merhi, et al., 2007), addiction to the games (Griffiths, et al., 2004). Griffiths, et al., (2004), the study is the comparison between teen and adult players. In order to examine various factors on an online computer game, researchers used questionnaire survey who played the most common online game. The result showed that gamers were significantly male more likely to sacrifice their education and work. It is worth mentioning that most adults' favourite aspect of the game was violence in the game. Ogletree & Drake, (2007) study also claims the same results they also found that male two or more hour a week significantly more likely than woman game. In addition, results also yield that male have less participation in class and more gameplay interruption between their sleep. It is worth mentioning that participants of this study also rated female characters of the game more helpless, weaker, less aggressive and sexually provoking than male characters.

As Swain (2007) described that trying to solve a social problem often create additional and potentially more entrenched problems. Digital games are also a powerful tool for communicating creating shared understanding of social problems by allowing users to experiment with the potential solutions in a safe setting and integrate community at a fundamental level (Swain, 2007). Therefore, features should be containing that allow players to connect with each other and organise. These features could be used to enable a "community of practice" (Wenger E., 1998). However, in the context of this study, to keep ILDs addicts away, social isolation and addition to the game could be seen as a positive outcome. Kaptelinin &

Nardi (2012) argued that subjects, who use external mediator tool in order to solve the tasks, naturally develop their skills, stop using these artefacts when becoming experts, and improve their performance.

6. Theory

This chapter is a part of DBR's '*context phase*' (See section 3.1.1. Context), where I describe the theoretical groundwork that the thesis report is built upon. A theory is a set of ideas, to obtain about what already known about some phenomenon in term of explanation of some existing behaviour and what to predict about the future particular outcome or set of results (Dunn & Elliott, 2008). The theoretical groundwork that the techniques based on the Active theory and Community of Practice theory. Furthermore, I strongly believe that I will perform better and receive encouraging outcomes by using a collection of empirical data, with those who seek recovery and extend the existing theory into a new direction (Dunn & Elliott, 2008).

6.1. Activity theory

Activity theory (AT) can be described as a unique social science, which analyses the development of everyday social activities, where humans develop their personalities and skills that help to transform social conditions resulting in generating new cultural artefacts and a new form of life (Kaptelinin & Nardi, 2012). Furthermore, today AT is becoming an international multidisciplinary research approach (Plakitsi, 2013) which is increasingly oriented towards technologies and their possibilities (Kaptelinin & Nardi, 2006). In this study, AT is set as a primary theory, which allows me to position myself in the real life problem, to identify the key issues, guides me to the relevant evidence and suitable solutions in order to deal with key issues of the particular field.

Moreover, AT is used as a framework for analysing and understanding new human activities and their models, intervention methodology for supporting advance collaborative learning by the recovered participants. Moreover, AT supports, promotes and follows the expansive learning cycle (Figure 2: The expansive cycle of learning actions) of participants in the activity system being studied, and by doing so, sooner can plan and identify the components involved in individual and overlapping tasks (See Figure 4: Engeström's second-generation AT model).

In the early 20th century, the Russian psychologist Vygotsky claimed that any activity relies on the network of actors to get desired outcome (Kaptelinin & Nardi, 2012) and community played the crucial role in preceding development. However, A.N. Leontiev under the leadership of Vygotsky established the cultural-historical approach to psychology, however, independently coined 'activity theory' (AT). There are five central principles of AT; "1- activity system as unit of analysis, 2- multi-voicedness of activity, 3-

historicity of activity, 4- contradictions as driving force of change in activity, and 5- expansive cycles as possible form of transformation in activity” (Engeström, 2001, p. 133).

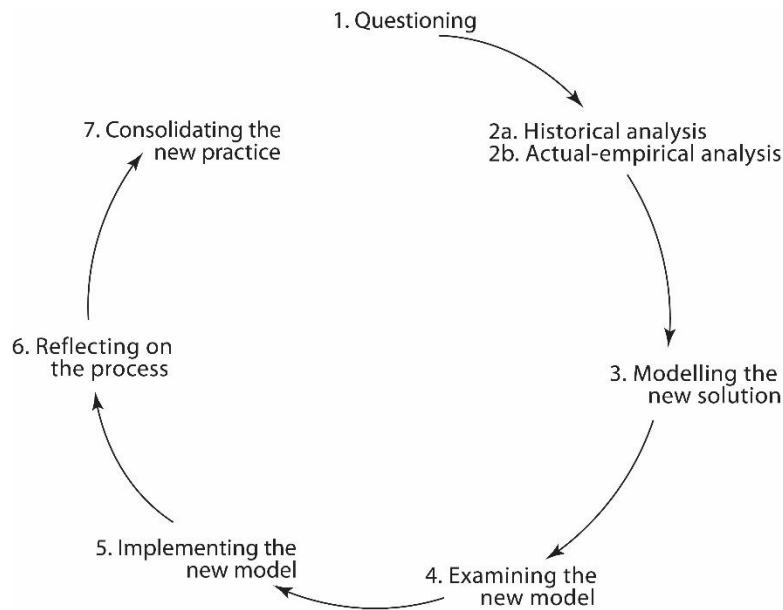


Figure 2: Engeström's expansive cycle of learning actions.

Furthermore, an activity that is a fundamental aspect of the concept of this theory is ‘subject < - > object’ understanding of a relationship between the subject and the object (Kaptelinin & Nardi, 2012). The ‘subject’ of an activity system is a single or a group of participants whose perspective is implemented. Furthermore, ‘object’ can be characterised as independent of the subject, which proceeds and motivates activity (Plakitsi, 2013). Leontiev described the object of an activity as its true motive (Engeström, 2015). Moreover, it refers to raw material/problem space or not need to be physically present to guide the activity but can be an assumed image because of active engagement with the object (Plakitsi, 2013). However, the third element ‘community’ resulted in the three-way structure interaction between ‘subject’, ‘object’ and ‘community’ (Kaptelinin & Nardi, 2012).

Furthermore, this approach drew from Vygotsky’s concept of mediation that can be presented as a down-pointing triangle that represents the way where he united the cultural artefacts with human actions with the aim of distributing social/individual dualism but focuses on individuals. This is known as the ‘first generation AT’ (See Figure 3: First generation AT model) (Kaptelinin & Nardi, 2012).

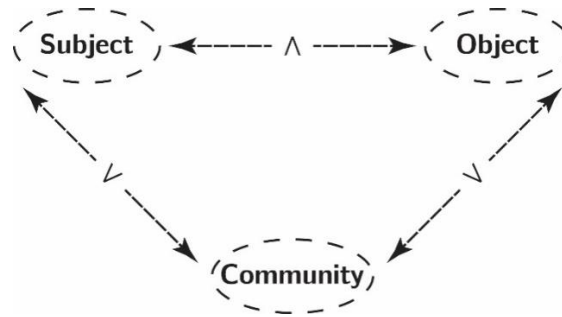


Figure 3: First generation AT model. (Kaptelinin & Nardi, 2012, s. 34)

Subjects have needs and in order to survive, they interact with objects of the world to achieve them. Furthermore, this process can be qualified as an activity; the level of that object has a status of a motive, which meets a definite need of the subject. Moreover, the objects are the generator and carry motives discretion, more than a goal or a product (Sannino, Daniels, & Gutiérrez, Introduction, 2015).

In the further study of mediation (the second-generation), Engeström proposed the study of artefacts ‘as integral and inseparable components of human functioning’ however, with the emphasis on the relationship with other components of the activity system (Engeström, 1999, p. 29). In the perspective of this study, the basic concept of the second generation of AT is (see Figure 4: Engeström’s second-generation AT model), that human activities are facilitated by the ‘tool’ (mobile phone, mobile game), that is the ‘subject’ (RAs) interacts with the ‘object’ (divert their attention; get support from other recovered person). In addition, simultaneously subject influenced by the social elements (the division of the labour, the community and the rules) (Plakitsi, 2013) by using a mediating tool to achieve the ‘outcome’ (Cowan & Butler, 2013).

It is worth mentioning that people continuously change and create new objects through their activities and these new objects are often unintentional consequences of multiple actives, however, hold important contradiction between the use of values and the exchange of values (Sannino, Daniels, & Gutiérrez, Introduction, 2015).

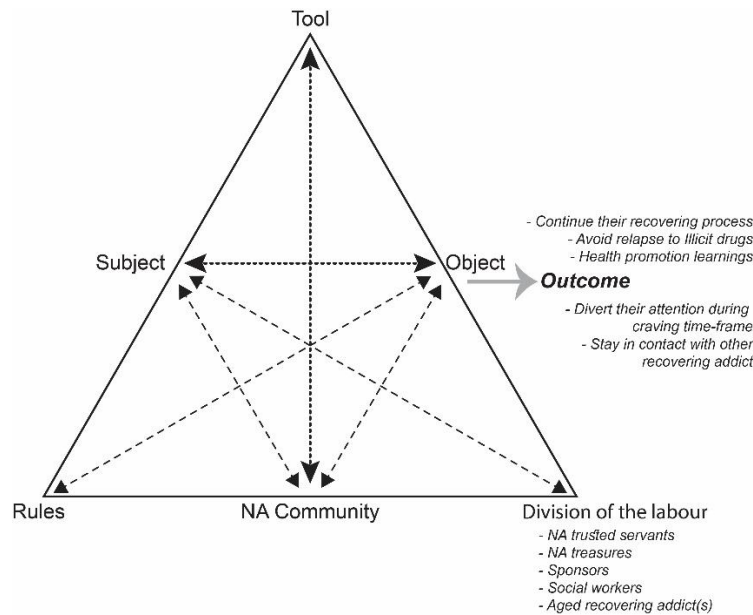


Figure 4: Engeström's second-generation AT model (Kaptelinin & Nardi, 2012, s. 34)

Social settings hold the key to transform the 'subject', therefore, there are three more elements:

1. **Rules:** defined by the organisational authorities, explicit and implicit mechanisms of the game controlling how it will operate (e.g., activities arranged by the NA, pseudonym of the players, and availability of the results only to authorities of NA etc.) (Plakitsi, 2013).
2. **Community:** participants of the activity system who share the similar object (addicts meeting at NA to take part in their 12 key step model (Plakitsi, 2013).
3. **Division of the labour:** Result of a variety of factors acting vertically and horizontally and refers to the "horizontal division of tasks between the members of the community and to the vertical division of power and status" (Cowan & Butler, 2013, s. 2).

Due to Engeström's center of interest on collective activity systems, he made use of both Vygotsky's and Leont'ev's models of mediation (Rückriem, 2009) and identified the activity and human labour as he described the "*The mother form of all human activity*" (Engeström, 2015, p. 54).

Due to Engeström's center of interest, he realised the joint achievement for analysis for AT not an individual activity. Therefore, Engeström proposed the '*third generation*' (see Figure 5: Engeström's third-generation AT model) of the AT which seeks to describe and influence qualitative transformation in human practice over time. Engeström formulated the ideas on dialogicality, multiple perspectives, and networks of interacting activities with the intention of expanding the framework of the second generation. Third-

generation AT is expanded to include at least two interacting activity systems, and to analysis, both up and down, outwards and inwards (Engeström, 2015).

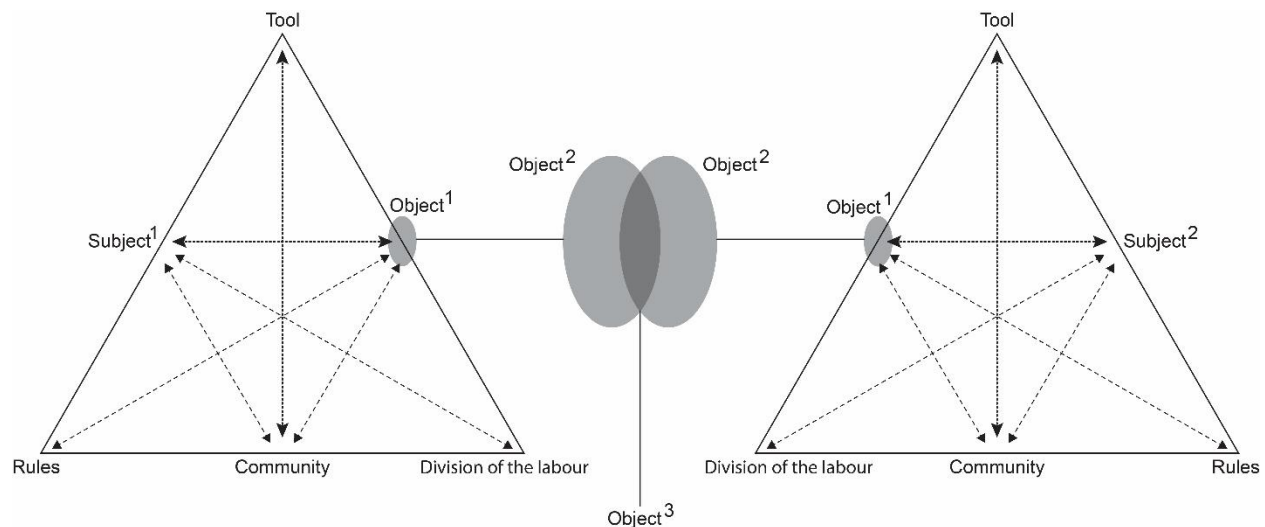


Figure 5: Engeström's third-generation AT model (Engeström, 2001, p. 136).

Engeström suggests that AT can be explained by availing five simple principles that are as following:

The first principle is the analysis of collective artefact-mediated and object-oriented activity system as seen in its network relation to other activity systems. They are better interpreted in contrast to the background of whole activity systems, despite being independent operations and actions (Engeström, 2001).

The second principle demands actions of translation and negotiation through multiple interacting activity systems. An activity system always encompasses variation in points of view, traditions and interests. This principle is called multi-voicedness of activity systems as it is able to create different positions for the participants taking their diverse backgrounds into consideration in order to be more unconventional and innovative (Engeström, 2001).

The third principle is the measurement of activity system transformations over a long timeframe referred to as historicity. The idea is to understand the history of problems and potentials of activity systems by analysing local history and its objects against more widespread theoretical concepts, procedures and tools that helped shape the local activity (Engeström, 2001).

The fourth principle is the understanding of contradictions as an important means of change and development. Contradictions are better referred to as structural tensions within and between activity systems. In capitalism of activities, the primary contradiction is found between the use value and

exchange value of commodities. For instance, when an activity system embraces a new element, it generates an aggravated secondary measure, whereby an old element is no longer compatible with the new one. Contradictions may lead to some disturbances and conflicts, but they also pave ways to new innovative attempts to change the activity (Engeström, 2001).

The fifth principle is extensive transformations in activity systems. Contradictions, which lead to an aggravated response in an activity system, give opportunities for individuals to question and deviate from standard norms that provoke collaborative efforts for radically different and broader changes in the object and mode of activity. A better way to understand a full cycle of expansive transformation is to refer to it as a collective journey via reconceptualization and development of the activity (Engeström, 2001). The fifth principle of AT, confirms the option of expensive transformations in activity system.

6.2. *Community of Practice*

Community of Practice (CoP) can be described as a group of people who come together aimed at improving their skills by communicating with each other, sharing their common interests, knowledge, goals alongside more experienced members by working together on different tasks and being involved more progressively (Wenger, Snyder, & Richard, 2002).

CoP can be described as a group of people who come together aimed at improving their skills by communicating with each other, sharing their common interests, knowledge, goals alongside more experienced members by working together on different tasks and being involved more progressively (Wenger, Snyder, & Richard, 2002).

The reason for choosing this theory is that CoP can be found in various social contexts built on a common interest (Wenger & Lave, 1991). Moreover, CoP is not restricted to physical settings and consists of online communities that are not bound by time and space. In addition, there is always room for it to emerge into a sort of reality where discussions and activities are directly present in order for one to take part in social and professional life ((Wenger, 1998) (Wenger et al., 2002)). It is worth mentioning that the client (NA) is already (unknowingly) taking advantage of CoP, where RAs gather from various distances in the meeting points (see Chapter 1: Introduction) to participate in setup meetings in the presence of experts e.g., doctors, therapists, and sponsors. During the meeting, members repeat/follow NA twelve key steps model, take part in the discussion to learn, get a solution to their question/problems and welcome

new member(s) to provide him/her with their support and guidance to leave addiction(s), alongside other activities to make community stronger/prosperous.

According to the Wenger et al., CoP points towards three dimensions:

1. Joint enterprise: A joint purpose for joint action(s) that does not express a common goal but involves shared responsibility and negotiated enterprise (Agrifoglio, 2015).
2. Mutual engagement: Refers to norms and social collaborations built by community members in the functioning of the community to guide the creation of a common understanding of the issues or problems that bind the members of the community together.
3. Shared repertoire: During the joint enterprise, CoP mutually advances to the set of common resources, i.e., pictures, meals, and gestures (Holmes & Meyerhoff, 1999) and linguistic i.e., shared stories, metaphors, jokes, laughter and jargon to convey meaning and facilitate learning within the community (Agrifoglio, 2015).

Based on these three community domains, in order to detect the existence of CoP, Wenger proposed 14 indicators (See Table 1: Wenger's 14 indicators). "Any community of practice produces abstractions, tools, symbols, stories, terms, and concepts that reify something of that practice in a congealed form" (Wenger E. C., 1998, p. 59).

Wenger's indicators		CoP domains
1	Sustained mutual relationships—harmonious or conflictual	Mutual engagement
2	Shared ways of engaging in doing things together	Mutual engagement Joint enterprise
3	The rapid flow of information and propagation of innovation	Mutual engagement
4	Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process	Mutual engagement Shared repertoire
5	Very quick setup of a problem to be discussed	Mutual engagement Shared repertoire
6	Substantial overlap in participants' descriptions of who belongs	Mutual engagement
7	Knowing what others know, what they can do, and how they can contribute to an enterprise	Mutual engagement Joint enterprise
8	Mutually defining identities	Mutual engagement
9	The ability to assess the appropriateness of actions and products	Shared repertoire
10	Specific tools, representations, and other artefacts	Shared repertoire
11	Local lore, shared stories, inside jokes, knowing laughter	Shared repertoire
12	Jargon and shortcuts to communication as well as the ease of producing new ones	Shared repertoire Mutual engagement

13	Certain styles recognised as displaying membership	Mutual engagement
14	A shared discourse reflecting a certain perspective on the world	Mutual engagement

Table 1: Wenger's 14 indicators identifying CoP (Wenger E. C., 1998, p. 125)

In CoP learning is not only a book, classroom-learning but is seen as a vital part of life that on occasion requires an effort (Wenger, White, & Smith, 2009). In addition, learning together shapes a beneficial viewpoint on the common form of the technology, which is above keeping a list of friends or exchanging messages but helps to find learning partners to have meaningful engagements (Wenger, White, & Smith, 2009). This also presents people with a new possibility to discover their communal aspects, likely to develop a new community, and by means of the internet, to experience learning friendship making it more attractive and productive (Wenger, et al., 2009).

Literature review (see Section 5.4: Digital Games' potential) also indicates multiple outcomes where people virtually engage in the various communities to take part in activities and enhance learning in the new collaborative model. Furthermore, CoP permits new CoPs' members to be involved in a simple task, where experienced members set norms, values and principles of the community. Moreover, new CoP-members slowly begin to increase involvement and participation in the tasks (Wenger & Lave, 1991).

Communities have played a vital role in the innovation of new technologies that have assisted communities to design and connect with each other in the new ways (Wenger, White, & Smith, (2009). Many practices and technologies are conclusions of innovative thinking that arose first time during the practice of the community e.g., PLATO (Wenger, White, & Smith, (2009). However, other technologies are results of someone, who recognized the need in the community that was not addressed, yet requires combination of community understanding and technology awareness, ongoing scanning of the technology landscape to make informed choices about technology and what is available and possible (Wenger, White, & Smith, (2009) i.e., in my case. Moreover, this requires both large and small decisions, a selection of the whole new platform or upgrading a new version of the tool that could give new opportunities and challenges to the communities (Wenger, White, & Smith, 2009). Wenger, et al., described three polarities that motivate communities to adopt technology;

- Rhythms: Togetherness and Separation
- Interactions: Participation and Reification
- Identities: Individual and Group

(Wenger et al., 2009).

In addition, the polarity view suggests that each pole depends on the other, constant process of balancing between the two poles, the range of relationship, and the interaction between the poles by any means. Furthermore, by examining a technology setting from NA community perspective yielded to recover, the figure 7 that provides a procedure to explore the role of a tool in NA community alongside how the tool might influence NA community (Wenger, White, & Smith, 2009).

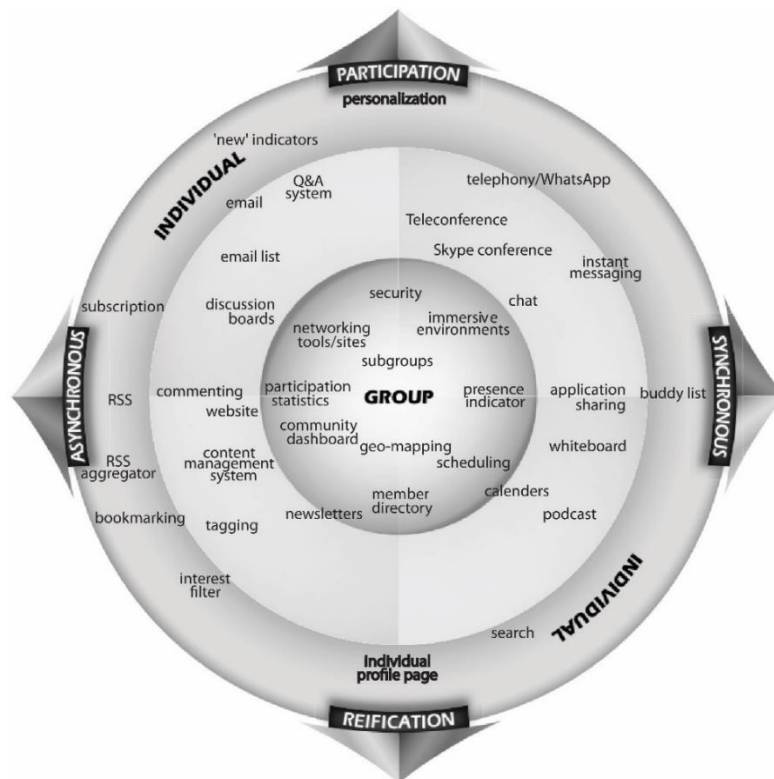


Figure 7: The tools landscape (Wenger, White, & Smith, 2009, p. 64)

Another reason for choosing CoP for this study is that Engeström expensive learning circle (see Figure 2) also visualises the community development process in practice i.e., developing a prototype, and their views and suggestions about the game and develop the third object of AT. In case a community developed a plan, which does not work, the same community members may develop new strategies for the new CoPs' members, and then the activity with other areas of focus can move into another development cycle that might expand and guide different changes. CoP theory will have a significant impact on designing the game, which will allow players to learn from each other (e.g., expand the knowledge of NA literature, discussions and ideas, examples of how others overcame cravings), without the restriction of time and space. The game I aim to develop might extend NA community by shaping it

into a virtual community. Furthermore, new visitors (e.g., addicts, new RAs) who cannot reach NA because of their distant locations could also gain access to the game-based virtual community.

7. Methodological framework

This chapter is a part of DBR's 'context phase' (see Section 3.1.1: Context) where I will present an overview of my means for process and generate data. The CD is chosen as a methodological framework, alongside the above-mentioned theories framework to support the development. By doing so, will help me to understand the logical point of view of the field as the whole world, prioritising and supporting human actions and social interactions in an everyday context (Kaptelinin & Nardi, 2012).

7.1. Qualitative Research Method

This subsection is a part of DBR's 'context phase' (see Section 3.1.1: Context). Since this research topic is very complex and involves correlation factors (e.g., craving), in order to carry out a detailed contextual analysis of the participants, the qualitative research method is chosen. As Bryman described, the qualitative research approach is associated with generating the strategy of linking data and the theory (Bryman, 2012).

The qualitative research is a realistic approach that will allow me to gather textual data of the participants' real-world setting, and then carry out the analysis to extract discussion that will emerge via interview (Bordens & Abbott, 2011). As Bryman described "Qualitative research embodies a view of social reality as a constantly shifting emergent property of individuals' creation" (Bryman, 2012, p. 36).

The qualitative research will allow me to familiarise with interviewee(s)' problems, and daily routine from addiction to recovery timeframe. In order to understand the meaning of the qualitative research and the use of it to explain social problems Biklen and Bogdan (2007) argues;

Charts and graphs illustrate the results of the research, and commentators and journalists employ words such as "variables," "sample size," and "results" as part of their daily vocabulary. Therefore, we come to think about research in terms of this vocabulary, even if we do not always know just what all of the terms mean. Research, then, as it is publicly known, is a synonym for quantitative research (p. 4).

In the qualitative research method, interviews come in different forms (Unstructured interview, Semi-structured interviews and structured interviews) (Brinkmann, 2013). Because of a limited timeframe (See Appendix: G. Time Plan for the project), and during the literature review demonstrating the usefulness of

this method employed by different healthcare professionals in their research (e.g., (Jamshed, 2014)), decision been made to use semi-structured interviews.

7.1.1. ETHICS

This study involves human participants; the area of ethics will be considered seriously (Abbott & Bordens, 2011). Since I am living in Denmark during the interview timeframe, it is not possible to provide the consent forms (See Appendix B1: Institute Consent Form) sign (See Appendix B2: Participant signed Consent Form). However, when I visit Pakistan, they will receive the copy of their talk and after reading they will be requested to sign the forms. It is worth mentioning that if there is any statement, which they find confusing, or does not seem like their statement individually they can refuse to sign the consent form until the statements are not correct according to their version. Furthermore, participants will have the right to refuse to contribute or refuse to be part of the study at any time and concerned institutes will be informed thoroughly in order to get permission to enlist participants (Bryman, 2012).

Furthermore, during the entire study time-frame confidentiality and privacy of the participants will be assured (Bryman, 2012). All the data will have a password and be only accessible to me (Bryman, 2012). Furthermore, being fully aware of the sensitivity of the topic, it is best for the topic interest as recommended by Bordens & Abbott (2011) to assign participants 'pseudonym' that will ensure that only I will know the real identity of the participants. The analysis of their rich discussion will provide fundamental scenario/reasons, e.g., causes of craving, factors involved in triggering the craving, adopted ways to satisfy the craving, during craving timeframe what makes diverting their attention hard, and what elements push to become relapses, or follow-ups etc. (Schelling, 1992). However, it is worth mentioning that potential bias might exist e.g., within the qualitative research strategy participants might find an interview very intensive or their personal biases (Bryman, 2012).

7.1.2. DATA COLLECTION LIMITATIONS

The validity of this study is very important to maintain, therefore, members of interviews will be individually requested to read their conversation (printed version in Urdu/English language if necessary), approve their statements by signing the consent form. However, if any member disagrees with his/her statement or I misunderstood him/her, the participant will not sign anything until I correct his/her

statement that will be also mentioned in the consent form (see Appendix section: 12.2.2 Participant signed Consent Form).

The medium of the interview will be the Urdu and Punjabi language since participants' national language is 'Urdu' language, and province language is 'Punjabi'. The strong argument behind conducting an interview, not in the English language is that my intentions were to make participants speak confidently, to avoid short answers including yes or no answers, and put the focus on the how, why and express answers in a more elaborate way (Privitera, 2015). In addition, the participant might not share their views properly due to the lack of vocabulary, the lack of speaking proper English, the confidence level of giving an interview in English (Foote & Trofimovich, 2016). Furthermore, I might lose fruitful information, an interviewee or I might misunderstand each other by conducting the interview in the English language that can result in false or biased information.

7.1.3. RELIABILITY, VALIDITY, GENERALIZABILITY

As mentioned above (see Section 7.1.2: Data Collection Limitations) the reason for conducting the interview in their native or provincial languages might reduce the amount of the subject bias. One of the potential reason for not conducting the interviews in the English language is that there could be a situation where I might feel that the interviewee is struggling to explain or put his emotions, and situation into the words. In addition during the interview, I might give him a hint to the lacking word or sentence might influence his thoughts or answers.

However, as validity is a concern, variations might exist, e.g., participants' swing of mood, different day routine, and timing of the interview, therefore, participants might answer the question differently or slightly different. Despite the medium of the interviews, the whole interview description with timestamps of each interview-translated version is provided in the English language in Appendix (see Appendix, Section 12.3: Interviews). However, in future, if the subject bias occurs, timestamps will help to navigate and reproduce the text once more. However, I or another person might translate the sentences differently but the sentence's content will not change. However, in the case of the other person choice (who understands these two languages) to translate or reproduce the text of the interview(s) once more, he/she must have an endorsement by the authorities (e.g., Alborg University, supervisor). After receiving the request, I will delete or put silence on those points where interviewee(s) perhaps are taking their names.

Data collection for this study is done by conducting three interviews, where the questions for the interview (see Section 7.1.4.1: interview guide) were prepared by using a fair amount of the literature review technique. According to Bordens and Abbott (2011), something is valid when:

“The idea seems to be that all studies should be conducted in such a way that the findings can be generalised immediately to real-world situations and to larger populations” (p. 118).

However, three interviews with only male ILD users, the findings are not possible to generalise to other settings, therefore, the findings generalise to the theory rather than populations (Bryman, 2012).

Moreover, theoretical inferences essence that is discovered through the qualitative data is vital to the estimation of generalisation and can produce ‘*moderatum generalisations*’. According to M. Williams (2000, p.215), “ones in which aspects of the focus of enquiry (a group of drug users) can be seen to be instances of a broader set of recognisable features”. (Bryman, 2012, p. 406). The goal of the interview studies is quality e.g., how well I have conducted and analysed the interviews rather than quantity e.g., not to impress with the number of interviews (Brinkmann, 2013).

7.1.4. SEMI-STRUCTURED INTERVIEW

A semi-structured interview is a method, where respondents (individual or with a group) have to answer a set of predefined open-ended questions (see Section 7.1.4.1: Interview Guide). The interview guide functions for the interview with core question that is essential to the research but this method also allows the respondent(s) to go further in depth with associated questions related to the central questions, which improves findings for the research (Creswell, 2014).

It is too early to predict how many participants I will need; however, I intend to conduct interviews until their textual data starts overlapping (Campbell, Quincy, Osserman, & Pedersen, 2013). Since I will interview those who are challenged by their behaviour e.g., stressed, anxious, with mood swings, this method will require the interview to progress in a relaxed way, which to some extent effects on a participant’s anxiety level and makes him/her feel more comfortable during the interview timeframe (Glaser, 1992, p. 66).. ‘Reliability’ for any scientific method is a key aspect; however, the qualitative research method uses a smaller number of the participants than the quantitative research method (Bryman, 2012). Despite the fact it will be unrealistic to make a truly representative picture, dependence will be on a small sample size (Bryman, 2012) Furthermore, It will be center that any participant’s opinion, likeness/dislikes, might differ from one another, however, it will make a solid contribution and generate new needs..

7.1.4.1. Interview Guide

As described above, the semi-structure interview has the properties of a pre-established list of questions, but it does not restrict me to ask only the pre-established list of questions. As Brinkmann described;

“Compared to structured interviews, semi-structured interviews can make better use of the knowledge-producing potentials of dialogues by allowing much more leeway for following up on whatever angles are deemed important by the interviewee”.

(Brinkmann, 2013, p. 21).

Interviews were conducted according to the interview guideline, after analysing a fair amount of literature about prescribed/ ILD (see Section 5.1: Prescribed and Illicit drugs’ side-effect), Addiction, Rehabilitation and Recovery (see Section 5.2: Addiction, Rehabilitation and Recovery) to educate on the topics, in order to produce valuable information about the target group before the interview.

A sample of the interview guide is divided into three separate sections as described below:

7.1.4.1.1. Addiction

- How would you describe the beginning of the ILD use?
 - Did you think that you were only doing it for the sake of fun and would not use it regularly?
 - How many ILDs did you use and which one became your ILD of choice?
 - How long had you been using the ILD(s)?
 - When you were using the ILD(s), were you aware of the possible dangers to your life?
 - Do you blame your immaturity for this?
 - What motivated/pressured you?
- What thing/phenomena forced you to use the ILD(s)?
 - How were you getting your ILD(s)?
 - How were you hiding the ILD(s)?
 - What was your normal routine?
 - How hard was it for you to get your choice of drug(s) and fulfil yourself?
- How did you acknowledge that from an occasional user, you became an addict?
- What challenges did you face in your addicted timeframe to fulfil your needs?
 - Can you put your feeling/desire into words when you crave for the ILD?
- What symptoms and surprising behaviours did you have/develop?
- What were the alternates you adopted when your choice of ILD was not accessible?
- Did your close family members (parents and siblings (if any) know about your addiction and what their reaction was?

- How did they come to know that you were an addict?
- Did your other relative (close/distant) know that you were an addict?
 - What was their attitude and how did it affect your life?
- Did the community (neighbour(s), workplace, school) you were around, know that you were an addict and what was their reaction?
 - What was the community's (neighbour(s), workplace, school) attitude towards you?
 - How did this attitude affect your life?
- Did your friends know that you were an addict?
 - What was their reaction towards you and your habits?
 - What was their attitude and how did it affect your life?
 - Did some of your friends join later?
 - Did some of your friends break up their friendship because of your bad habits?
 - Did they try to inform some of your family members that you were on the wrong path?
- When did you realise that you were doing it wrong and you needed help?
- Would you like to add/share something more, which you forgot to mention or think I should also know that?

7.1.4.1.2. Rehabilitation and Recovery (NA)

- What did you/your family do after realising the disease of addiction to start a new normal life again?
- Had you been to a rehabilitation centre or hospitalised?
 - How was the treatment?
 - How did you handle your surprising behaviours, during rehabilitation timeframe?
 - How often did you use the ILD during rehabilitation timeframe?
 - What difficulties did you face during the treatment?
- How did you start your recovery?
 - Who introduced you to the NA recovery program?
 - What is the difference between NA and other treatments/therapies?
 - What are/were you seeking by joining the NA support group meeting?
 - Do you think NA is the place you were searching for to get out of addiction?
- On early days of recovery timeframe, how did you handle your surprising behaviours?
 - How often did you use the ILD(s) during recovery timeframe?
 - How often did you fail to control your behaviours?
 - When failing to control your craving, what was your choice of ILD?

- What is/was your motivation to join NA's setup meeting?
- What are some of the things, which motivate/force you to go to NA?
 - Does it sometimes occur to you that you do not feel like going to NA anymore?
 - After such swing of behaviour, how do you keep your focus on attending the NA setup meeting?
- How did you control yourself not to use anything to satisfy your need during the craving timeframe?
- What does NA offer you to start taking the recovery process seriously?
 - What benefits did you gain after visiting NA recovery program?
- What keeps you motivated to complete the recovery process?
- What are your plans for future after recovery?
 - Will you continue visiting NA after your recovery?
 - Would you like to help other addicts to break this bad habit after your recovery?
- What are the most common activities you are involved in during the recovery timeframe?
- Do you feel some change in your social life after participating in the recovery program?
 - Do you feel that after completing your recovery you might start using ILDs again?
- Would you like to add/share something more, which you forgot to mention or think I should also know that?

7.1.4.1.3. Video game

- Are you fond of video games?
(If the answer is no)
 - Why don't you like to play a video game?
 - Would you like to play a game on your smartphone?
 - Would you like a game to provide you support for your recovery?
- Would you like the idea of playing the game with other people who are also recovering the same as you?
 - Would you like to play the game with addicts?
 - Would you like to play the game with those who are recovering?
 - Would you like to learn about recovery by playing the game?
 - Would you like to learn about healthy activities by playing the game?
 - What kinds of elements could you think of a mobile game should have for those who are recovering?

- Would you like to help someone to develop the concept of the game?
- Would you like to take part in further research in coming future?

(If the answer is yes)

- On what type of technology do you prefer to play the game?
- When do you like to play the game?
 - On which special moments do you like to play the game?
 - Do you feel a difference in your behaviour before and after playing the game?
- What motivates you to play the game?
 - How long do you play?
 - When you play any game, do you feel that it has an effect on you?
- What are the elements in the game you like the most?
 - Why do you like those elements?
 - What elements do you hate in the game and why?
- What are your thoughts about playing the same game online?
 - With who would you like to play the game?
 - Would you like to play online with others?
 - Would you like to reveal your real identity to the players?
 - Why would you prefer to keep your identity secret when you share everything during start up meetings?
 - Do you think by playing you can learn from others?
- In order to help your recovery, what elements should a game contain?
 - If I request you to suggest a game theme, how will you describe it?
- How can a game contribute to your recovery process?
- If not, then why do you dislike playing the game?
- Would you like to add/share something more, which you forgot to mention or think I should also know that?

7.1.5. NARRATIVE PROCEDURE

Interviewees were requested to have detailed narrative of the specific memory (Brinkmann, 2013).

Therefore, to provide reader easy of reading each interview narrative is divided into three phases. The first phase will describe the addiction's circumstances as well as the reasoning behind addictions, while the second phase will cover the phenomenon of rehabilitation and recovery, and lastly, the third phase

will illustrate the role of the mobile phone after rehabilitation more precisely during the recovery timeframe and interest towards the game (if any). Moreover, each narrative's first phase will explain their level of addictions and the challenges/difficulties they were facing. Furthermore, the second phase will explain the timeframe of being cure and what challenges they were facing and which methods they used to strengthen avoidance from ILD(s). Analysis of these two phases will guide me answerable to RQ1 and RQ2. In this analysis procedure, I will put theory, methodology and data together and by doing so my findings will emerge in an analytic procedure (See figure 8: The Data-Theory-Methodology triangle). Furthermore, during the first and second phase, the transformation of usage of the mobile will also have a center of attention and third phase will elaborate their current usage of mobile.

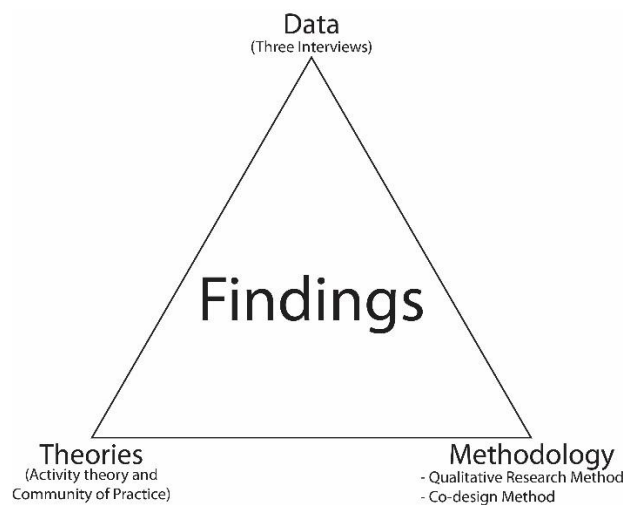


Figure 8: The Data-Theory-Methodology triangle (Brinkmann, 2013, p. 92)

During the data analysis, in order to have clear and bigger picture the affinity diagrams were made on the online software (realtimeboard, n.d.), where items were sorted in bucket to use later during creating figures (Holtzblatt & Beyer, 2015). Affinity diagram consists, major findings such as inspirations, motivations, problems, experiences, behaviours, withdrawals, specific detail regarding addiction and recovery timeframe, NA traditions, NA 12 steps and use of tool etc. To provide reader better view, these major findings has been transformed into affinity diagram that could be found in below link.

https://realtimeboard.com/app/board/o9J_k0HxMeY=

By clustering of these major findings in affinity diagram will allow me to do analysis that is more accurate in order to answer the RQ1 and RQ2. Findings will be only related to their specific memory that can assume as a general evidence.

Below I will provide the narratives of the three interviews, as complete conversations' translated English language version is available in the Appendix (see Section 12.3: Interviews).

7.1.5.1. *Narrative of Interview 1*

The participant of the first interview is 30 years of age male who became an addict in the age of 17. I gave him pseudonym DBUNA.

From the beginning DBUNA (see Appendix, Section 12.3.1: Interview 1), had curiosity about people smoking hashish and was suspicious about their red eyes and chicks and he was fooled by the false phrases (excuses) to smoke hashish. DBUNA explained that he never smoked a simple cigarette and because of his curiosity, he directly smoked hashish with a regular hashish smoker. Because of that extremely strong cigarette, his first few hours were terrible at least until the hashish reduced its effect. However, when the effect became low, he started to feel pleasure, that forced him to try once more, thinking he was doing just for fun and would not smoke regularly, but eventually because of his immaturity, became an addict and started using ILDs alongside with alcohol. DBUNA continuously had thoughts about smoking hashish and eventually lost his routine to sleep because of increasing amount of hashish.

In the beginning, to arrange hashish, he used to call his PR (addicts in the neighbourhood) and later he started calling the dealer to deliver him hashish on some location because, he was afraid of police. When he was smoking only a few joints, he used to hide hashish inside his mobile, shoes and in the pillow. However, with the passage of time access to hashish became easier and amount to smoke hashish increased he began to put it inside his locker at home and started running out of money. His daily routines became unstructured and he was not concerned with a day or month. Furthermore, despite the weather intensity, his main activities were around arranging hashish and smoking hashish in a secure place to go to his hallucinogen world. When he became more addicted to hashish, he faced a shortage of money, therefore, to make money for hashish he started tricking his family but was not stealing money.

Whenever he got the right amount, he spent it all on buying hashish, a pack of cigarettes, to gain solo hallucinogen moments unless there was a celebration. DBUNA preferred to smoke alone because hashish was expansive for him. Regardless of the torment, he was feeling thirsty, and had a continuous craving for hashish. DBUNA eventually became fearless and started ignoring the community around him. Mostly, he had swings of moods, e.g., angry, irascible, peevish behaviour, difficulties in falling asleep, lack of interest in studying or work, the problem with eating without smoking a joint and over thinking

about everything, especially when he was high. During the shortage of hashish he started using other substitutes to feel drowsy but was mainly getting satisfaction by smoking joints. In the beginning, in the state of drowsiness, he was afraid to face his family members and their suspicious questions and search of his pockets, therefore he started hiding hashish in his personal room locker. However, he still wonders how his family came to know about his illegal activities but when they came to know, he stopped hiding from them. DBUNA still believes that his family came to know that he smoked hashish because of the smell in his clothes, but blames more his unstructured routine and choice of friends, but they were not aware of how far he had gone with the addiction. Among relatives, only one cousin came to know that he smoked hashish and during the high addiction timeframe, he stopped meeting all his relatives that make them suspicious and started questioning about his absence but his family always hide his addiction from them.

His family members locked him in the room, stopped giving him money, and he was sometimes threatened to be kicked out of the house because he brought shame on them since everyone in the neighbourhood knew about his addictions. However, after a short while, they started demanding that he should get the treatment. Among his friends, there was clearly a split, some of those who did not like addiction, stopped their friendship and others who thought addiction is fun remained the same. However, those who left him were not important for him anymore, because he has accepted that he is in the mess and those friends who prefer to stay away from ILDs will also get dirty if they stay with him. However, he carries on smoking joints but left friendship door open for everyone but mostly made addict friends. It is worth mentioning that, none of his non-smoker friends who remained his friend was affected by his bad habits. However, he did not call any of them his true friend, who could have guided him and stopped from doing something wrong. Furthermore, according to him, like every addict, he was also planning to quit but only after smoking one last time on coming celebration. However, before that celebration day, he got into a fight with someone and his family took him to the rehabilitation hospital, where his father had already made an agreement with a senior doctor.

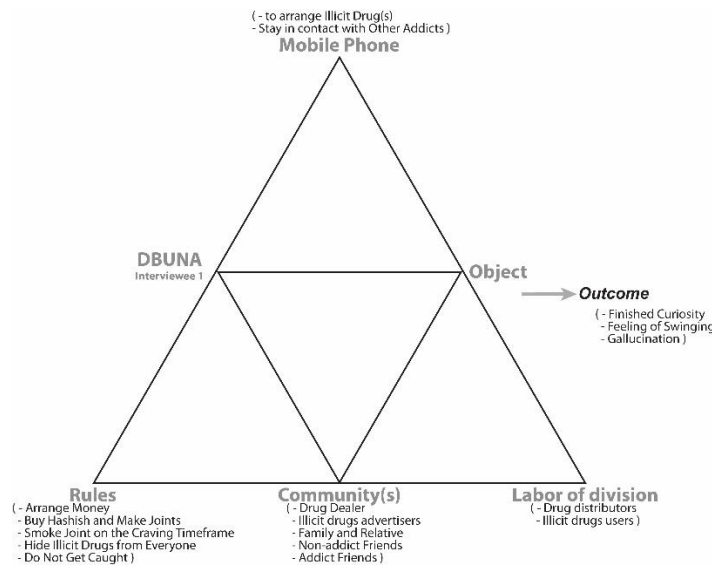


Figure 9: DBUNA's actions mediated by tools, with specific goals during addiction timeframe

When they admitted him to hospital for the detox treatment, he told himself that it was all over and he was powerless in front of the doctor and other medical staff members. After a few days, his activities were very limited in the hospital and when he completed his treatment, the doctor made an agreement (signed a contract) that at any time, the hospital team can inspect, take his dope test and in case of any suspicions, they will admit him back for a longer time and under extra strict control. Furthermore, when he came back, his locker was empty, and his all ILDs had been flushed down the toilet. Family members were making sure that he did not get access to any illicit thing. However, within six months, he gained back his lost trust by not smoking joints, he started going outside, and alongside he joined follow-up meetings that was offered by the hospital. During the hospital's follow-up meetings, he was shown a role model (recovered addict) and gained access to books to read and also came to know about NA program. He was fed up staying at home under strict monitoring therefore, he started going to both places for recovery treatment. However, it is worth mentioning that on this timeframe, he was not ready to leave his addiction that paved the way for smoking a few joints again. Alongside with few joints, he started smoking normal cigarettes, chewing PAAN (betel leaf combined with tobacco etc.) and Gutka (areca nut, containing tobaccos and catechu).

DBUNA found hospital follow-up meetings very strict but NA more welcome, where any addict can become part of NA's community. Furthermore, attending NA meetings with little consistency, he met serious to quit and non-serious addicts both who were after rehabilitation treatment. However, with consistency in his meetings, finally he found inspiration to quit inside him what was missing to take recovery process seriously, as he described it as '*burning desire*'. DBUNA found NA the place where

people are open to their problems and where he forgets his own problems by listening to other stories, bearing so many similarities. During the NA meeting, each member admits to their addictions which reminds them they have the disease and discuss their problems with each other and read literature. At the end of the meeting, all members of the groups hugs each other, and if anyone has any further question to ask, he/she can discuss it with certain people (e.g., sponsor, other experts). Furthermore, before ending the meeting, group members celebrate if any member there completed his/her yearly recovery (e.g., one, two, three, thirty etc., recovered years). DBUNA strongly believes that if NA program had not been introduced to him, he could have become an addict again. Furthermore, he uses these NA recommended methods that I mentioned above as a tool to gain strength during the recovery timeframe in order to gain positive outcomes (see Figure 10)

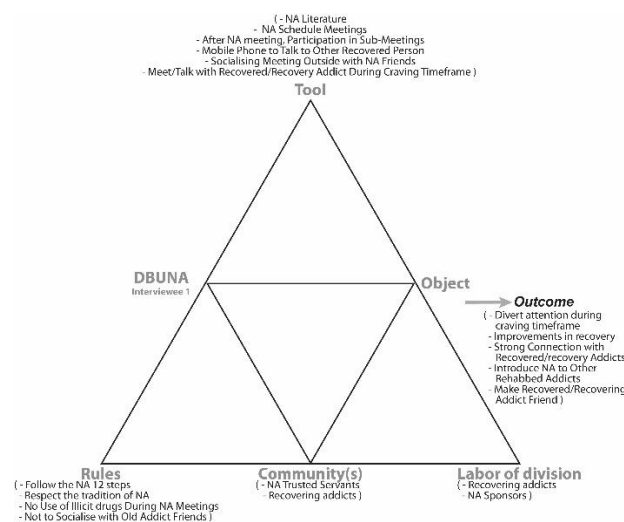


Figure 10: DBUNA's actions on NA recommended methods, mediated by tools, with specific goals

The few meetings of NA gave him the courage to reject thoughts of ILDs, and by talking to others, he came to know what methods other people are adopting to divert their attention. With the passage of time, he started feeling burning desires, which paved the way for take recovery seriously, he also felt the change in his vibes and made friends at NA with those whose vibes were matching with his, and started meeting with experienced RAs (e.g., sponsor). NA literature also provided him the answers or gave him knowledge of those things he was not aware. For example; *'after a break, if RA uses the ILDs, the first joint will give him so much pleasure and in search of that pleasure that RA will start smoking number of joints but will not get that the same pleasure and will relapse that will take him to serious addiction again'*. Because of unconditional love, friendship, and to meet fellowship, it never occurred to him to skip the meeting and he found peace within himself. Furthermore, NA also claims that if any RA comes with regularity, one-day other members' talk will influence that will motivate him to leave

addiction. When he found the light to leave addiction for real, he does not feel craving and when thoughts about using ILD come to his mind, he read NA literature. NA literature make him aware of possible outcomes e.g., *if any recovering addict start using of ILDs RA will end up in the more disgusting situation as compared to the one before*. Even when he dreams that, he is using ILDs, he immigrate got up and found himself full of sweat and with heavy breathing, feeling of guilty that he has done something wrong in his imagination. Today, he has moved to another city (capital city) for work, started fulfilling responsibilities, mostly has friends from NA, and for almost 7 years he did not taken any ILDs and even his ILD of choice. However, he cannot become a sponsor because he did not follow all NA key steps and sponsor's roles on himself but to stay strong in his recovery he simply continued meetings. DBUNA likes to visit NA meetings because there he met all kinds of people regardless of their religion, cast, and financial level to discuss each other's problems, knowing these problems stay in the NA meeting room, and no one denounces anybody.

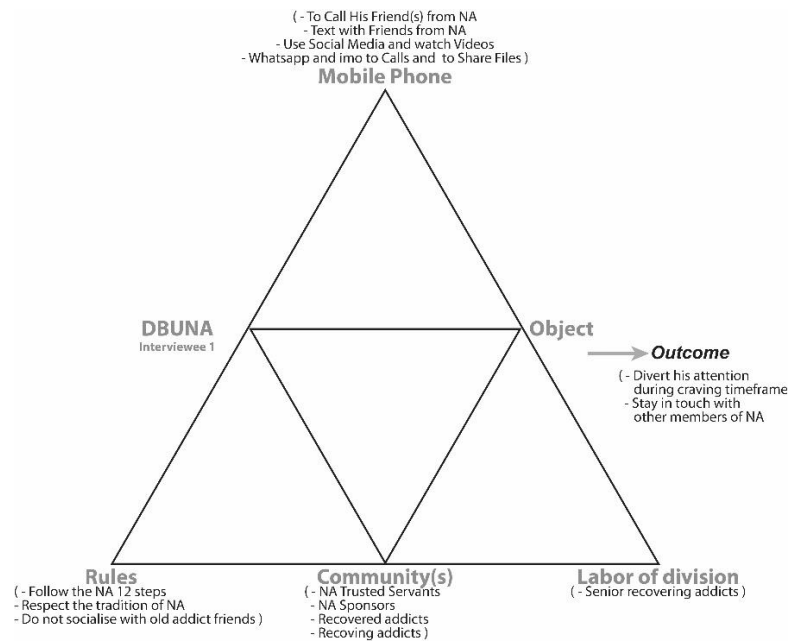


Figure 11: DBUNA's actions, mediated by tools, with specific goals during recovering timeframe.

It is worth mentioning that during his childhood he used to play video games, however when he became an adult, he was introduced to ILDs, he lost interest in the game and his first and last entertainment was the use of ILDs. Moreover, having said that during his work routine if he gets bored, he watches movies, and chats with friends on 'WhatsApp', 'imo' and sometimes calls his old and recovered friends. However, he will be interested in the playing game if NA will introduce it to supplements recovery process and game can keep his anonymity. However, he is only interested in playing the game with RAs and other NA community members but not with addicts. DBUNA is also interested in learning health promotion

because of his line of work (driver), reading some literature about recovering, and would like to participate in the further development only if he is available in his home city.

7.1.5.2. *Narrative of interview 2:*

AKBRA is a male who described his childhood as school going, being surrounded by books with no sports activity (see Appendix, Section: 12.3.2: Interview 2). His family did not allow him to go out to play with other kids because of their overprotective behaviour. Therefore, with the passage of time, this isolation became part of his personality. However, sometimes, after finishing his reading, and having no revised reading especially on school vacations, he was allowed to go out and play snooker because he was not into any physical game due to his conservative personality. Because of the society he was living in, he too had been influenced by the addict's personality, was wondering about their relaxed, and botheration free life. The heaviness in addicts' voice and stagger, gave him an attraction to be influenced as well but he was unaware of the ILDs' negative side.

After finishing school, AKBRA started college where some college students approached him constantly until he did not try hashish. It is worth mentioning that he learned how to smoke normal cigarettes only to try hashish and after trying, he thought he became complete. In a short period, while thinking smoking joints is just fun, he later started using it regularly yet being aware of their possible danger, he tried to stop the use of ILDs from the first week but did not succeed. In order to fulfil a gap in his personality, he tried ILDs and added sleeping pills, alcohol, opiate in his ILD list; however, opiate (brown heroin) became his favourite ILD.

One day one of his cousins told his mother about ILDs, which she simply rejected and could not believe that he was on ILD, because he was good at studying. AKBRA thought he knew everything, but he was not aware of the craving disease. AKBRA started joints not to feel lonely, and to go to his fantasy world until he tried heroin. However, when he tried heroin, he liked it more than all the above-mentioned ILDs. On this timeframe, he started hating his family, and like his addict friends, felt desire to have a partner for sex. AKBRA started enjoying it more and two to three hours before going to his girlfriend, he used to take heroin mostly within limit but sometimes he exceeded the amount. In the struggle to stop the use of ILDs and to have desire to study more, he had to leave his first college because there his friends were mostly encouraging him to take ILDs.

However, when he found himself powerless front of his craving (mostly heroin), he used to call his friends to arrange but later finding dealer contact numbers. Since, heroin was much more expensive as

compared to hashish and alcohol; he started arranging only for himself. AKBRA used various methods to hide his ILDs and sometimes took ILD(s) home while hiding them in his underwear, but mostly ILD(s) were hidden outside. During hashish addiction he had a very peevish behaviour e.g., not feeling hungry without smoking, high blood pressure, easily getting angry. However, during heroin addiction, he had series of headaches, experienced vomiting, sweating, irritation, cramps especially when the heroin effect was over. Therefore, he started using multiple times in a day to act normally in front of everyone. His craving was becoming more and more intense, and it was not very easy for him to arrange more money to buy heroin. In the struggle to arrange the increasing amount of money, he had to lie, trick people and even had to steal money from home. When he found himself so much powerless, he took his father's savings (around 20 thousands) and bought heroin for all the money that he used for almost four months.

Because of his conservative personality, he did not have so many friends or a good relation with neighbours; therefore, he used ILDs alone. However, when his father came to know about his bad activities from his neighbourhood friend, his parents him did forbid him to go out. During his house arrest timeframe, he reacted normally in front of them and was using the ILD at home mostly on the roof. In fact, he on vocation with his father on hillside, but he went prepared and used it on his first available time asking to go to the toilet for a while where he sniffed heroin because it was very fast as compared to making a cigarette and smoking there. After a while, he started studying privately, where before going to class and after class, he used to smoke hashish or heroin. Sometimes, his hand smell of cigarette but still, his family rejected all disturbing thoughts and believed that their son did not take part in any illegal activity because he had 85% marks in his exams.

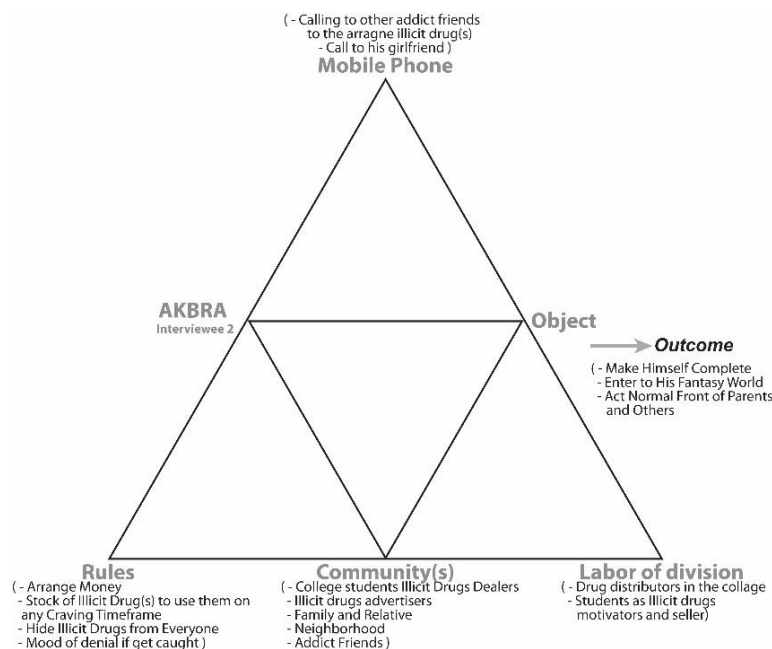


Figure 12: AKBRA's actions mediated by tools, with specific goals during addiction timeframe.

Because of the lack of awareness, his family never found out that he was using ILDs even when he mostly staggered until he told them that he was an addict, therefore, really needed his parents help to save him from this disease. His parents were in deep shock, but they were worrying so much because they did not have so much money to provide him the proper detox treatment because all their savings was stolen and spent on heroin.

AKBRA felt lucky because the doctor told him that if he had used heroin one more week, he could have died. His detox treatment took 4 months, where he was not allowed to meet anyone from outside. The detox treatment was not very comfortable; he was in severe pain, therefore, he was only allowed to smoke simple cigarettes. He was suffering from constant mood swings, depression, headache, vomiting and difficult breathing. After his detox treatment, he took part in follow-up meetings where he was introduced to NA program. When he was discharged from hospital, for a little while, he was locked in his room because his family thought he would meet his old addict friends. However, after a short while, one of his old friend, who attended NA meetings for a couple of years, took him to the NA meeting. AKBRA found NA a place where addicts are welcome to spell their inner guilt out in order to feel strong, and NA members help each other in their recovery anytime. During the NA meetings, when other addicts shared their story, he felt that their stories were very similar to his and other members shared their ideas, suggestions that gave him much strength. Furthermore, the time when the interview was conducted, it been 16 months he did not use any ILDs however, being under his recovery timeframe, he still had mood

swings. According to the knowledge which he came to know by reading NA literature and other recovery addicts' empirical experience, he needed around 24 months to stop experiencing mood swings. On NA meetings, he shares his problems with others without any fear and in presence of experience members, therapists or sponsors; who provides him answers to his questions. AKBRA feels that when he visits NA meetings, shares his stories with others, he feels much more relaxed, therefore, he has attended forty NA meetings so as not to have any thoughts of using ILDs. Furthermore, there are some moments when his own family cannot help him in his condition, therefore, he gains motivation for continuing his recovery, gets answers to his problems by talking and listening to other RAs. While the interviewing timeframe, he mentioned that he still has sleeping problems, and cravings, therefore, when he feels these symptoms he goes to pray, talks to his family if they can help otherwise he will call his NA friend(s) (if not available), to divert his attention from ILDs. For example, a few months before when he had a very serious craving attack, he called multiple friends, where one friend came at 3 am and he took him for a ride. During the city tour and the conversation, his friend told him that 'when you look at your past and compare yourself with those who are still addicts, and then you will see how much you have succeeded and made recovery', and eventually his talk changed his mind. Furthermore, by going to NA meetings, he also gets access to the 'NA blue book', which provides him guidelines to spend his life according to NA 12 steps. For example, according to NA key steps, the first step is that before starting the meeting, he accepts that he was powerless, addict life was unstructured, and this acceptance gave him the strength to avoid ILDs. AKBRA feels comfortable while sitting and sharing these problems with other members. However, in case of any discomfort, he talks to his sponsor, who advises him about not only his problems but also other things which he barely sees at that moment.

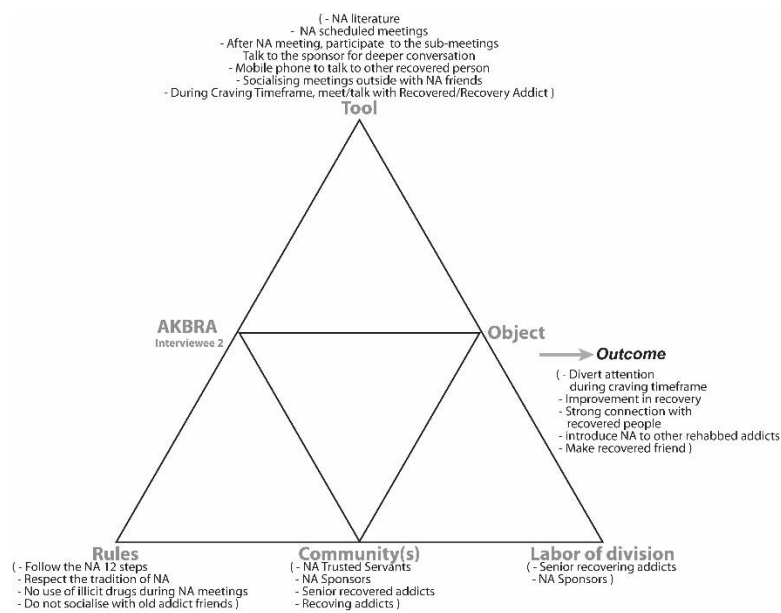


Figure 13: AKBRA's actions on NA recommended methods, mediated by tools, with specific goals.

During the interview, he also mentioned that he has finished NA 12 key steps and in future, after his recovery, if anyone asks him to be his sponsor, he will happily do that. However, during the interview timeframe, he is on his early stage of recovering, he is not allowed by the NA to contact with any addict friend because experts from NA told him that there is strong probability a higher percentage of relapse if he contacts with addicts or to his family. AKBRA also mentioned that he can never finish his visits to the meetings for the rest of his life, and even if he goes anywhere abroad or moves to another city, he will have to find meetings somewhere there if available. Currently (April 2017) he is going to college, reads books, attends NA meetings regularly and if there is any time available, he goes out to play snooker. Furthermore, NA meeting has left a very big impact on him; currently he has only recovered and RA friends, but not those who still chose addiction for their life. The NA programme and meetings left a positive impact that currently he is boycotting addicts' social activities during celebration timeframe even he still craves. Furthermore, he still believes in order to quit addiction to ILDs, the detox treatment is very important to gain a positive influence from others RAs.

It is worth mentioning that he is not fond of playing electronic games anymore because the books surrounded him in his childhood and later he became an addict, so he never had a chance to entertain himself by a video games. Although he himself does not play games on mobile, he sees many people playing, even many play during NA meetings or during breaks. Presumably, he believes that it is a good idea if video games could be also used during the recovery timeframe only if NA tell him to play the game. AKBRA would like to play the game if he can interact with other RAs. He also believes that it

could be a good source of information especially for RAs, to divert attention during craving, but only if his real personal identity can keep secret. Because he thinks even if /though he tells stuff about himself, no one can judge his identity because addicts' conditions are very similar to one another, only situations and circumstances differ. AKBRA thinks that it is a good idea if the game can allow expanding NA community, so all NA members can help each other and numbers of available people to help will also increase and when he sees that a game is working during his recovery timeframe, he can play it for longer, too.

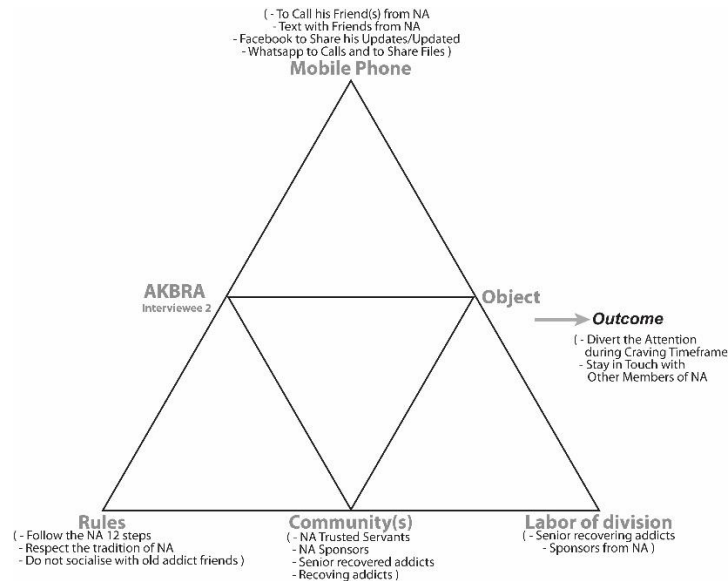


Figure 14: AKBRA's actions, mediated by tools, with specific goals during recovering timeframe

However, anyone from NA tell him to play the game with addicts, he will not play that game with them because it is against NA's traditions and is the violation of their 12 key steps. AKBRA also believes that by playing a game, an addict can only get information about few basic facts about NA but cannot quit the use of ILDs without taking a detox treatment. In a mobile game, he would like to include information about NA programs, tradition, and the 12 key steps and access to NA literature. Since he lacks game information, he does not know how he can help in developing timeframe, but he would like to take participate because maybe he can advise something positive or something might be helpful.

7.1.5.3. *Narrative of interview 3:*

MCNNA is a 25-year-old married male, who had been introduced to ILDs when he was in the final year of high school (See Appendix, Section 12.3.3: Interview 3). At the beginning of a new school, he made many friends from his class. Among these friends, some of them were addicts, used to smoke joints, and apparently, he became attached to this group of friends because they inspired him. MCNNA was not a tense person neither any problem from his family side but due to the influence of his addicted friends, just for the sake of fun, he also smoked joints. Around one year, he kept smoking joints secretly twice a week at numerous places e.g., at a friend's place, graveyards, unused train-line areas, grounds. During the first year, he arranged ILDs for himself from friends and soon he made contacts with ILD district distributors and with the main dealers of these distributors because of his good pocket money. His family was unaware of his illegal activities because he was secretly using and hiding the leftovers or newly bought ILDs in his belongings e.g., socks, shoes, jeans small pockets, in his own drawer at home or anywhere where he felt no one could access it.

During his first year, he was unable to understand withdrawal symptoms and cravings for ILDs, however, after a year, he learnt about side effects, he had a continuous feeling which he described as 'I wish I had not taken my first cigarette that day for the sake of fun' but he found himself powerless confronted with cravings. Furthermore, after finishing his school, on the first days of collage, he made new friends who shared the same personalities as him and started smoking hashish on a regular basis with them. MCNNA was unaware of the reality that he was an addict while thinking that he could stop smoking at any time. However, soon he realised that he became an addict when he started smoking joints not twice a week, but every day, and even many times a day with the increasing amount of hashish. In the beginning, he felt relaxed but desires to have sex became the most important thing. For two years he only used hashish, however, after two years, he started using various drugs e.g. cocaine, alcohol, weed, spice, skunk, sleeping and dancing pills alongside hashish. MCNNA also drank bhang (edible preparation of cannabis) when he was unable to find any of these. It is worth mentioning that because of his economical condition, weed and hashish remained his choice of ILDs, whereas other ILDs were used occasionally and on some special occasions. Since skunk, weed, spice are new in Pakistan, they are expensive compared to hashish, and therefore, he used them only on those occasions when he had a good amount of money.

MCNNA described himself as the person who was enjoying a happy life, with no problem from the family side(s), but slipped into evil ways in the name of fun and paid a big price for that fun. The first month of college made him realise that he was not only an addict but also his expenses increased, his values at home and in society decreased, and he started living restlessly, increasing both the amount of

ILDs and sex. MCNNA described this timeframe as falling prey at the hands of the complex(es) e.g., low thinking power, to avoid cravings or withdrawal symptoms, being all the time high and having ideas of making money even from illicit resources. MCNNA had prepared cigarettes for the next day, and if he ran out of cigarettes, he prepared them in educational institutes, even fearlessly at home, he started thinking negatively about everything, started hating his family and noticing very small things. Furthermore, due to the use of increased amount of joints alongside other expensive ILDs, e.g., weed, spice, skunk, he started running out of money, therefore, in order to afford drugs, he misused his educational institute fee and started stealing money from home to satisfy his cravings. In order to relax his restless behaviour, he found himself powerless in front of addiction cravings and especially withdrawal symptoms, and labelled that timeframe as the indescribably painful days.

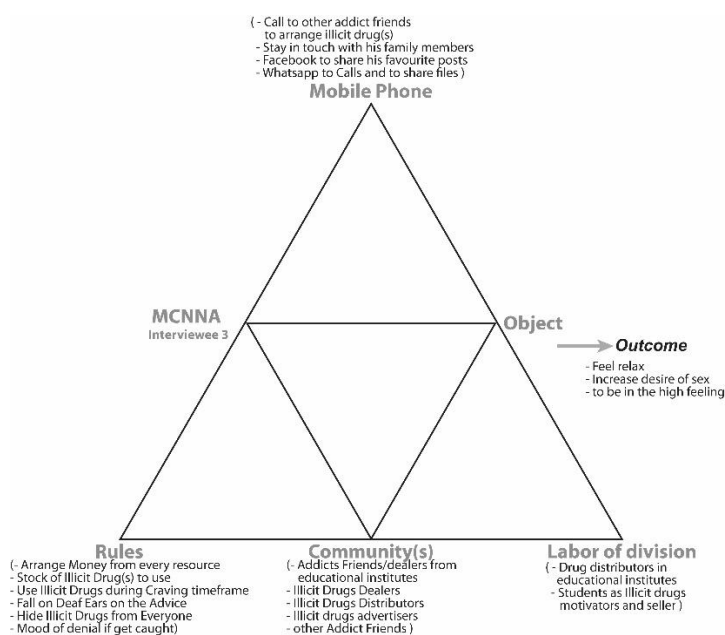


Figure 15: MCNNA's actions mediated by tools, with specific goals during addiction timeframe.

In addition to uncontrollable cravings and running out of any ILD, the withdrawal symptoms were so severe that he used to cut his body with a blade. Furthermore, soon the time came when he started paying the heavy price for his addiction e.g., he dropped out of college, speculations arouse among his community, and he experienced a huge drop in personality and his values. His friends were also aware of his ILDs' abuse, some of them advised him but sooner some of them boycotted him socially, some of them broke their friendship, and with some, he finished his friendship. His family also started getting negative vibes from the community, because of his choice of friends, places known for their bad reputation where neighbours had seen me, therefore, neighbours' behaviours towards him became very specific, but they minded their own business. Furthermore, friends and younger boys taunted and

dispraised. In addition, to towards him, they did not drop the series of denouncing but deep inside they were inspired/suspicious of using ILDs the same way he used to be. After a short while eventually they asked some hashish by giving someone references in order amuse, however, soon revealed their use of hashish by smoking front of him, and start smoked joints with him.

However, finally, his family came to know about his addiction because of his non-addict friends. When they came to know, he was homebound, received very strict feedback with lots of aggression, stopped being supported financially, and had his mobile taken from him so he could not make any contact with anyone. They were deeply shocked, especially his mother because in the entire family no one was an ILD addict, and his family informed other relatives about his addiction. His other relatives were also suspicious of his activities because they also saw him in some places among addicts, but they did not talk directly to him but informed his father and elder brother, and he simply rejected all blames when his father inquired, but he gave him advice and predicted his future because of his life experiences.

MCNNA fell on deaf ears and did not take his family talk seriously and kept thinking about his addiction, however, just to pretend that family lecture did work on him, he made some changes in his routine, and in this timeframe kept smoking joints at home either on the roof or in the toilet, close to an exhaust fan where an air freshener also helped him to trick his family. However, one day when he went to the toilet, made a cigarette and smoked the whole cigarette in the toilet and sprayed an air freshener, he forgot to pick his leftover hashish, and left it close to the mirror. His father went into the toilet, where he saw hashish close to the mirror, and he immediately came out and asked him about it, but like before, he simply refused, his father became angry and he searched his pocket where he found a few joints.

After that he was beaten, but when his father calmed down, he advised him to leave this bad habit and kept advising whenever he came back from the outside, but when he was caught red-handed, his family made his freedom circle very small, he was forced to spend time at home and was only allowed to go outside for little shopping and had to account for overspending money and a few times, to cross-question him, they took him to that store to confirm whether he had bought something for himself or not. Since he was only acquainted with addicts, not with non-addicts, because he was not allowed to meet addicts, he started getting depressed. In addition, he became the victim of his complexes, and eventually, realized that if he did not change himself, these series of reactions will not stop and as result, he realized that he was doing something wrong. MCNNA failed to handle the endless number of problems; ILDs stopped satisfying him even though in his body there was only an ILD. Alongside, he was getting tired of the countless number of lectures from family side, negative vibes from neighbours and non- addict friends,

which made him, realize the things he used to fall on deaf ears, and he realised that he could not continue like that and destroy his future.

His father took advice from other relatives, one of them advised his father to give him a rehab treatment, and recommend a place. MCNNA knows about different rehab centres, their normal costs as well as that for addicts, a rehabilitation treatment is very important. However, when his family took him to that rehab centre, they came to know that it was not possible to give him the treatment there because of the expenses (almost 13000 DKK per month) with basic daily necessity. However, the doctor suggested they should take him to a different free/lower cost rehab centre and gave him some medicine that he took for one month. However, this medicine did not make any difference and he kept smoking joints alongside taking medicine that served him as a blessing from the sky. Because of the medicine formula, which also contains steroids, he felt mostly hungry and very lazy. After the passage of time, his body shape started changing and his family thought he was recovering, however, they were unable to realise that his capacity of smoking joints had also increased because of eating a lot. However, when his family inquired about the reason behind his drowsy behaviour, he used to put all the blame on the medicine, and built a trust around the community.

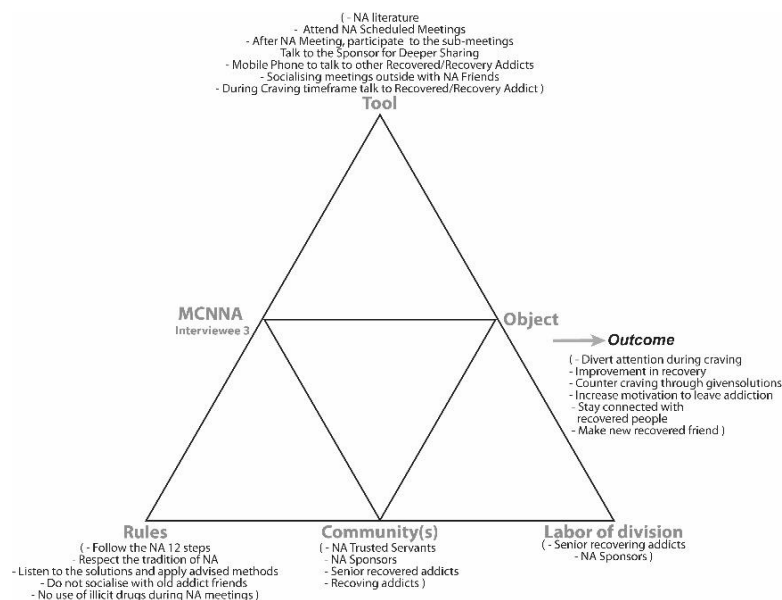


Figure 16: MCNNA's actions on NA recommended methods, mediated by tools, with specific goals

During this one-month medicine timeframe, he set his own timetable to use ILDs because he started a job, and since he ran out of referred medicine, his capacity of smoking joints also became lower. His cravings also became lower and his mind started opening to possibilities which were locked because of the increased amount of ILDs and to manage his cravings and due to his busy hours at work, he made his own

schedule to smoke joints either on the night or on a day off from work. After a short time, he realised that when he was busy at work, he did not crave for joints and this made him realise that he could cure himself like that, therefore, voluntarily he increased the number of his working hours by two. Furthermore, to manage his cravings and avoid withdrawal symptoms, he kept smoking after working hours, at weekends and at celebrations, and soon he came to his first year of addiction timeframe when he only smoked joints two or three days after and at the weekend. Because of changing activities and gaining trust of his family and some of his old non-addict friends, he also gained the trust of the community because they noticed that he had stopped meeting with addict friends. Around six months, he kept his addiction the same as his first year of addiction but the only difference was he bought a very small amount of hashish, smoking very secretly all alone because he knew everything - where to buy, costs, how to make joints. In these six months, he gained his lost respect, family trust, friends and neighbours' responses made him feel that he had gained his lost reputation, something he was lacking during his addiction timeframe. After realising it in 2016, his recovered addict friend invited him to NA meetings, where he met above 10 to 23 years RAs. When he went to NA, the organisers of the meeting told him that they only wanted him to attend 90 meetings, after around 24 meetings, he would have cravings, and until 90 meetings, he would quit his addiction for the last time. However, at his first meetings, he thought this would just be a drama where people have to act and tell their stories about different moments during their recovery, and everyone is drowsy and they all use ILDs. However, after a while, he also shared his story, and described himself as an addict, and in return, he got advice from the people attending the meeting. In a short timeframe, he started visiting NA and he described NA as a place where addicts talk about practical aspects of their life and give solutions, which a rehabilitation centre is unable to understand, which is why their process is not very efficient. When asked questions, he explained that the difference between NA and other treatments/therapies is that NA does not permit a person to use anything, whereas a rehab centre's theory is taking medicine, and to bear the pain, they have only medicine solutions. Their people are normal, and do not understand the torture of the addiction and cravenness and they think if they do not use ILDs, they will die. MCNNA further explained that if he shared anything/problems, recovered/RAs' previously experienced problems came in front of them and they gave solutions because these problems were common among most of the RAs sitting there. In addition, all the people at the meeting (RAs) had been in a similar situation as his own, and also read the same books and offered a better solution. Furthermore, with the passage of time, he found support and realised that this way could help him to quit addiction because when he craved, he shared his experience with others and in return, he got solutions, the solution how they had tried to leave their addiction(s). It is worth mentioning that his craving became lower, but he was still failing to control it, therefore, he kept smoking in his free time and after work secretly. Last

summer (2016), when he was switching his work place, he got a week off, therefore, he smoked around 2 joints per day and during this week, while he was smoking, thoughts came e.g., ‘Why am I smoking joints?’, which made him more determined to leave addiction. This was the moment when he started taking NA meetings and NA group members’ advice more seriously. After that day, whenever he was recovering from smoking joints, he called his NA friend who finished his craving either by a talk on the phone but mostly by visiting him. RAs advised him and from that day he was working on their advice which they adopted to leave addiction, e.g., talk to your NA friend, go outside and talk to normal friends, take a shower, smoke simple cigarettes, alongside the NA step, ‘not today but tomorrow’, which is repeated every single day. With the passage of time, he tried all the advice on him and made his own methods, like eating Paan, Gutka, going outside to play the game, watching TV, and listening to songs. MCNNA further explained that eating Paan, Gutka, smoking normal cigarettes was acceptable in society and he still preferred to call addicts to these licit drugs rather than ILDs because at least he did not crave for those licit drugs and cut his body with blades. However, he was determined to leave them as well, to leave addiction for the last time by using applying methods on him like chewing gums etc.

When he worked on NA steps and followed NA advice, he realised that nothing was wrong with him, he was perfectly fine and could leave addiction, and after a while, he stopped thinking about addiction. His confidence level got a boost, by continuously attending meetings where he met people who were addicted for even twenty years and today for around 20 years this person has been clean and perfectly fine and eventually, he became more motivated when he convinced himself that if this person could leave addiction, so could he, being addicted for five years. MCNNA described this phase as a recovery battle where RAs compete with each other, e.g., do more reading to be stronger in the recovery and increase their confidence level, admires other RAs like ‘20 years clean and what a successful life he was enjoying’, and also want to be like him. In addition, if this recovered addict has been coming for 20 years, there must be something he is getting from NA, which also motivated him to attend meetings regularly. With the passage of time, his motivation became so high that he started waiting for NA meetings to meet his friends, senior and junior RAs and to meet his sponsor to discuss his problems; cravings even family problems and he found the solution to his problems. Furthermore, since he got married, sometimes he skips meetings, he has different engagements with his wife and family, and in this situation when he is unable to attend a meeting for more than one week, he will get a call from NA or from his NA friend and will be inquired about the reason for his absence. However, his attention does not turn to addiction but to shaping a brighter future and gaining those things which he missed because of addiction e.g., thinking of his new life, securing his future, completing his studies, making good money, good education for kids and providing them with a good life. MCNNA still hopes that after 90 meetings when he applies all NA steps,

he would like to organise his own meetings and he gives all this credit to attending the NA meetings. However, until today he is working on his own recovery and therefore, he is not allowed to interact with any of his addicted friends to show them the NA path to leave their addiction. However, he is waiting for that day, and meanwhile, preparing for that day to be so motivated to counter his addicted friends and motivate them to join NA meetings.

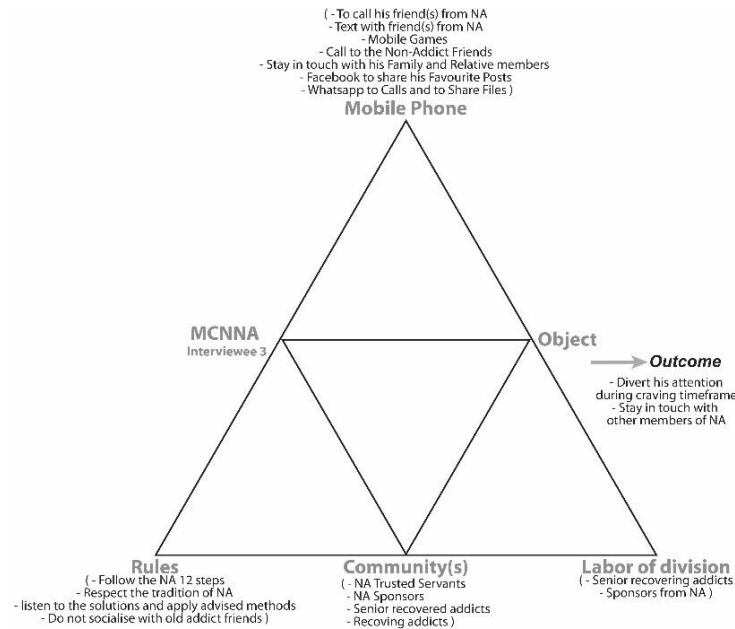


Figure 17: MCNNA's actions, mediated by tools, with specific goals during recovering timeframe.

After getting married, his life has changed (became much busier), but when he feels bored or just wants to be entertained, he plays video games on his mobile i.e., Subway Surfer, and The Angry Birds but these games are besides those activities which kept him busy during his craving timeframe. MCNNA plays these games just to entertain himself for 15 to 20 minutes and if during the game, he does not want to play Subway Surfer, he switches to The Angry Birds or vice versa. MCNNA plays the game just for the sake of fun and feels entertained, he likes coins to make higher scores and the Santa/policeman who catches the surfer, and in The Angry Birds, he likes birds. Because of his mobile video game experience, he thinks it is a good idea to have it since it can provide support for the recovery process. Moreover, he thinks this could be a modern and unique platform pointed towards those people who come from a far distance to attend meetings, and especially seek NA support, call NA friend(s) and visit/invite NA member during the craving timeframe. However, he would like to play only with recovered and RAs and would like to keep his identity secret. Because he admitted that when he goes to NA meetings, he discusses problems openly and honestly in front of everyone with his real identity, but on mobile, it is hard to determine who is playing or reading our messages. Therefore, he pointed towards good

requirements for the game, i.e., securing real identity, NA literature to learn many things and increase recovery battle, quizzes. MCNNA pointed towards NA quiz because at NA meeting many RAs cannot read, therefore, other RAs read to them, therefore he believe that if literature can come in the shape of quizzes, it could really contribute to recovery. MCNNA, however, excuses himself for having little knowledge towards the game and generating game requirements, but he mentioned that there are many game addicts who even play games during the meeting(new members) and if they can become the game addicts, it could contribute to their recovery even stronger.

7.1.6. ANALYSIS OF NARRATIVES WITHIN RQ1 AND RQ2 DOMAIN

The first research question was made in order to gain the understanding of those factors that occur and drive a RA away from the recovery process. This research question will not only help to explore the factors that force a RA to try ILDs, but also explore the factors that are deeply connected to the history that turns a non-addict into the addict.

All there interviewees admitted that people they know exploited their inner curiosity, and motivated them to try ILDs. The reason to choose hashish as their first ILD was easy access and low price. In the beginning, they thought that this was just for the sake of fun and they would not use it on a regular basis. For a while, they used it from two to three times a week that paved the way for using it on a regular basis. Because of their regularity in use and being aware of possible danger, they tried to quit. However, they were unaware of the force that demolishes the thoughts of quitting and motivates to keep on trying with the increased amount.

They used it to enter their fantasy world and kill their boredom; however, they were unaware of the disease that flourished equally as the amount increased. This disease is known as the craving that made them powerless and demanded the immediate intake of ILDs making their life unstructured. If they were unable to feed their craving, they got into peevish behaviour, easily getting angry, with high blood pressure even eating disorders. Therefore, in order to behave normally and keep their craving under control, they kept using ILDs. With the passage of time, the amount of the ILDs not only increased but craving also forced them to try stronger ILDs. Because of such intense craving, before reducing the amount, they had to feel their craving to avoid a headache, vomiting, irritation and cramps.

After rehabilitation, they discharged the toxins and fats from their bloodstream; however, in order to learn how to control their craving, they were introduced to the recovery centres by the rehab centre. After that, all three interviewees were locked at home, but whenever they got permission to go outside, their first thought was to try their drug of choice, (in the case of two interviewees the choice was hashish and in the case of one it was heroin). As NA literature described, “Regardless of what we tried, we could not escape from our disease” (Narcotics Anonymous, 2008, p. 14).

NA is one of well-known non-profit fellowship organisations (Narcotics Anonymous, 2008) operating worldwide (NA, n.d.). During the interviews, all the interviewees admitted that they were using their drug of choice on the first available chance because they failed or were unaware of handling their craving. To get outside and to try their choice of drug, initially, they took part in the NA meetings where they used ILDs before and after meetings to control their craving. After a while, they started sharing with other RAs and then they realised that these people had also used ILDs and now many of them were enjoying a successful life. The interviewees explained that they used ILDs in the same way as earlier, the only difference was that during their recovery timeframe, they knew where to find drugs, how much it would cost and how to take their drug of choice. They kept using their drug of choice until something inner urged them to quit the addiction. From that day, they took part in NA meetings regularly to share their problems, get solutions, and leave old friends because they were the threat to their recovery and to start a new chain of friends (Narcotics Anonymous, 2008). Their new friends not only provided them support in their recovery but also during the craving timeframe. They explained that had it not been for the inner motivation because of NA meetings, they could have relapsed and become addicts again. However, the craving attacked them multiple times during their recovery timeframe; therefore, they sought support from their friends from NA. The analysis of their conversation provided not only answers to RQ1 and RQ2 but also valuable information. NA literature and interviewees’ valuable sharing paved the way for educating me and understanding this field based on their empirical knowledge to contribute equally during CoD development phase (see Chapter 8: Design).

7.2. Designing Method

This subsection is a part of DBR's 'context phase' (See section 3.1.1. Context) where I will present the methods that were applied in the design process. These methods will serve to ensure a well-structured process that is recommended for in expansive robust development.

7.2.1. CO-DESIGN

Within the last six decades, designers, especially in the area of technologies, are rapidly moving towards a future user with what they design trying to satisfy what people need (Sanders & Stappers, 2008). Since then, in the early design phase, people have given more room for the initiative in roles, in order to gather provide expertise and participate in the information, conceptualising activities and ideating (Sanders & Stappers, 2008).

The user-centred design approach primarily in the US and the participatory Northern Europeans-driven phenomenon are both influencing one another today (Sanders & Stappers, 2008). The current state of the human-centred design (research) as practised in the design and development of products and services can be seen in Figure 18.

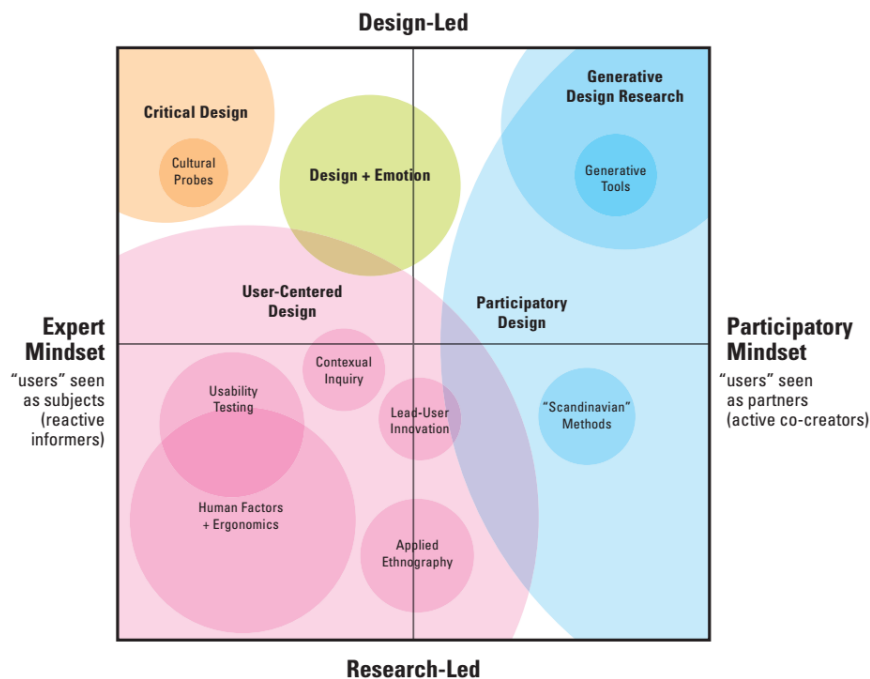


Figure 18: The current landscape of human-centered design research – Research Types (Sanders L., 2008, p. 14)

Within this landscape, in the area of the participatory design, the notions of co-creation and CD have been growing (Sanders & Stappers, 2008). The terms CD and co-creation are today often confused and/or treated synonymously with one another. However, in order to attest interest of people around the world towards these content areas, co-creation/CD can be seen on Google search engine hits. It is worth mentioning that on 28 May, 2017 on Google (Google, n.d.) co-design pulled 194,000,000 (without “” operator) and CDesign pulled 9,860,000 (without “” operator) hits and, “co-design” pulled 528, 000 (with “” operator) and CDesign pulled 1,260,000(with “” operator) hits. Moreover, on 28 May, 2017 counts on Google Scholar 39,800 for CDesign or 97,600 for co-design, 71,200 co-creation or 10,600 for cocreation, as compared to 762,000 for product design and 7,240,000 for a design show that the terms are also seriously discussed in academic design circles.

It is also worth mentioning that many authors with special attention to health care sector and public service innovation wrote about co-creation (e.g., Cottam & Leadbeater, 2010). As Cottam & Leadbeater, (2010) described “the key to successful doctor-patient partnerships is to recognise that patients are experts too” experts of their experiences, “their social circumstances, habits and behaviour, attitudes to risk, values and preferences” - and that both types of knowledge are needed in CD (Cottam & Leadbeater, 2010).

According to Sanders & Stappers, (2008) co-creation represents any act of communal creativity that is shared by two or more untrained people working together in the design development process. Moreover, CD refers to the communal creativity of collaborating designers, and therefore, CD is an explicit illustration of co-creation and today the design process can be seen in figure 19 below.

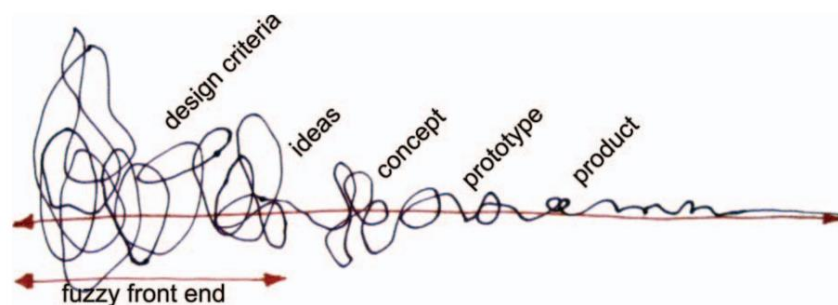


Figure 19: The front end of the design process has been growing as designers move closer to the future users with what they design. (Sanders & Stappers, 2008, p. 7)

This is also worth mentioning that, this approach is fuzzy whether people who take part represent the majority of people who will use the product that is being designed and developed. According to Sanders & Stappers, (2008) deploying co-creation on the early development process can have a positive impact and future operative consequences where CD influences the roles of players in the design process that is illustrated in figure 20.

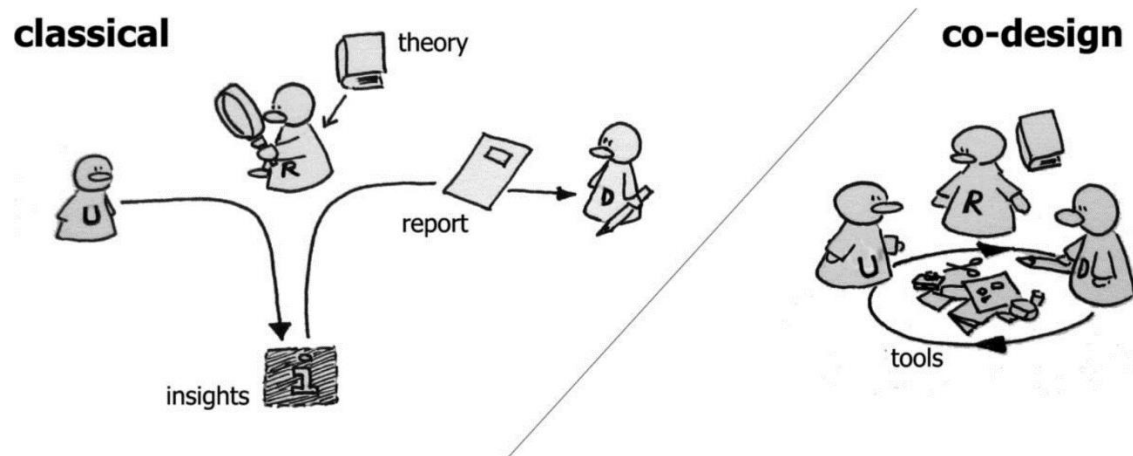


Figure 20: Classical roles of users, researchers, and designers in the design process (on the left) and how they are merging in the CDing process (on the right). (Sanders & Stappers, 2008, p. 11)

As figure 20 is the self-explanatory, as can be seen in the classic user-centred design process where the researcher(s) gather knowledge through theories, observation(s) and interview(s) to transfer his knowledge to the designer(s) in various forms. In addition, designer(s) during creative thinking generate ideas, concepts, but users have no input in the design phase. However, roles get mixed up in CD, where researchers provide tools for ideating and expression during generating insights. The designer and researcher together or the same person with both abilities work/works on forming the ideas for the development of the mobile game.

7.2.1.1. Pursuing CD

In order to pursue CD, decision has been made to approach paper-based representation (see Section 7.2.1.2: Prototyping). The unfinished paper representation will communicate better than the words that allow users to add, remove anything even alter design at any moment to better support their tasks. During CD process, think-aloud method been used to get valuable information and deep understanding of individual's settings to identifying and analyzing the requirements for the mobile game is aimed to design (Sahebkhair & Asl, 2014). Think aloud method will also enable to capture the challenge of constructing a

potentially shared object between three activity systems (Engeström's third generation AT). In addition, this potentially shared object is consist of likeness, dislikeness/unlikeness and concept/elements of the mobile game. To provide reader better view, this potentially shared object has been transformed into affinity diagram that could be found in below link. https://realtimeboard.com/app/board/o9J_k0BY5dU=

7.2.1.1.1. *Think-aloud Method during CD*

It is worth mentioning that during the CD process, think aloud will be audio recorded which could be used as a backup of the notes, condense them and later on could be revisited to reduce confusion. Since participants were not familiar with think-aloud method, they were informed a bit about think-aloud method alongside more precisely, think aloud method's benefit that is mentioned below;

Think aloud method is one of the best ways to inform not only me (researcher & designer) but everyone around, what is going on in individual's mind. By doing so it will reduce memory failure and will benefit me to capture individuals', task behaviour to gather requirement without delay and analysis in designing the mobile game (Sahebkheir & Asl, 2014). Furthermore, it will motivate participant to involve the team more effectively especially during a brainstorm, to comprehend questions, share, and refine the ideas generation trough shared knowledge and transform it on paper. Furthermore, think aloud will also enable me to do audio recording which will provide me advantages that have mentioned above.

However, while performing tasks, solving problems, participants will be requested to think and talk about their actions, which will enable me to analyse and resulting in the responses (Jaspers et al., 2004).

7.2.1.2. *Prototyping*

The prototype is the pattern that keeps the significant components of the system. This is a clever beginning, which gives an outline and helps to understand and eliminate problems. Prototypes play a crucial role in design and evaluation progress (Plösch, 2004). Furthermore, empirical evidence proves that the usage of prototypes can bring imposing improvement ((Gomaa, (1986); Gordon & Bieman, (1995); Sobol & Kagan, (1989)). Prototyping is a technique of solid practice for relation design (Plösch, 2004), which helps to deduct complications on specific requirements and reduces the risks and costs of development (Boehm, 1984).

There are different types of prototypes that come with advantages and disadvantages; however, the decision has been made to use the paper prototype, because it allows the users to CD the solution together with the interviewer (Holtzblatt, Wendell, & Wood, 2005). Despite a few disadvantages, prototyping provides some key advantages of developing it that are presented below:

- Ambiguity: Due to prototyping, communication between end users is much easier and reduces uncertainty when discussing prototype among end users.
- Completeness: Useful as a method where end users tend to complain about lacking aspects or services.
- Correctness: It helps to detect prototype error in the early stage of the process.
- Understandability: Model is used to develop the expression of realism. Scenario-based prototyping helps to understand the problem that has to be solved by designers.
- Internal documentation that model supply wrote the documentation by supporting tasks and facilities indeed improves internal documentation as well.
- Architecture: As a matter of facts that it will be used as a framework, the model of architecture is, determine faster in the process.

(Plösch, 2004, pp. 7 - 8).

There are also other key advantages, which are considered not to include in the report because of their unavailability in this, study i.e. maintainability, reusability. In order to begin design activates, set of the requirements were established (Rogers, et al., 2002) which are available in the section 8.1.3.1.1 (see Section 8.1.3.1.1: Requirement developing Process).

7.2.1.3. *Usability Testing*

Usability testing is a technique to evaluating a design whether the end user can use the developed mobile game. Usability testing is a technique to explore through observation, questionnaires and interviews. This technique is also known as filtering and refining the design includes empirical or experimental methods. (Dix et al., 2004). During the evaluation a design, the single participant will perform a set of 5 to 10 tasks and will find about a third of the usability problem. According to Nielson (1993), three to five evaluators will discover approximately 75% of the usability problems. However, testing with more than five participants there is little to be gained (Nielsen, 1993). Usability testing is a flexible and cheap approach and will be conducted at least twice at various times during the design of iteration(s) (Dix et al., 2004), to ensure that all usability requirements have been met in the mobile game the second iteration. However, if not possible to usability on the second time, results and next iteration will be presented on thesis defence day.

7.2.1.4. *Use Case*

The development of the first prototype with its specific functions would not have been successful, had it not been for the application of use cases. According to Larman, use cases, more precisely text stories, narratives or diagrams, focus on the use of the product with the aim of understanding the user flow and achieving the goals and are therefore considered an important part of the whole unified process (Larman,

2005). The use cases widely popular technique is useful for not only the discovery of the functions of a product but also understanding and describing the procedures (Larman, 2005). Use cases determine the way the product should behave (Cockburn, 2000). Use cases benefit to overview of the product, which can influence the processes and goals in analysis, design, implementation and project management. Larman claims that use case diagrams illustrate the product's environment and its functionality by visual means (Larman 2005).

8. Design

This chapter is a part of DBRm's 'Lab phase' (see Section 3.1.2: Lab). In this chapter, the design process is described and the interface (first iteration) is presented.

8.1. *Design process*

In this section, the approach that has been applied for the development of the mobile game will be explained.

The mobile game that I am developing will be called *MG4RA* (stands for **M**obile **G**ame **f**or **R**ecovering **A**ddicts). The name MG4RA is inspired from Shortell, (2011) and Ormston, et al., (2015), tools names.

As figure 21 is self-explanatory, to the complete flow of the development follow the progress of the design that is explained below. This was chosen to provide the reader with a better understanding of the order that tasks were performed and how that contributed in the development of first iteration(s) of the MG4RA.

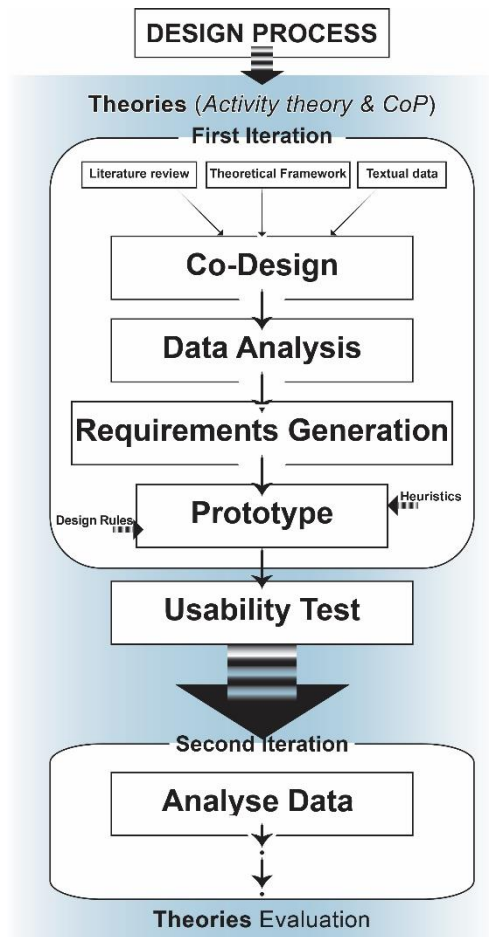


Figure 21: Design process structure, developed by the author

Furthermore, this section will elaborate on the selection of the participants, the selection of necessary supplies, and the methods, which were applied to make the most use of the co-creation sessions. Furthermore, this chapter will also cover the potentially shared object between three activity systems (Engeström's third generation AT).

8.1.1. IDENTIFYING THE PARTICIPANTS

In the early stage of co-creation, two interviewees availability was not possible for various reasons. Therefore, in order to find one or more participants, I took part in two NA meetings and I found two members who showed their interest in future development. Both members are male and lived in the same city I lived in. The first participant has been a recovered addict for 23 years who is also performing

sponsor's responsibilities. The second member is a young RA who is attending NA meetings for more than one and a half year. Furthermore, the sponsor also invited a few more people to take part in co-creation sessions; however, because of the month of Ramadan (*Islamic holy month of fasting*), limited activities alongside extremely hot weather (40 – 46 °C) prevented many people from participating. However, one more participant, a recovered addict for 15 years, also joined us for a while, helped a bit in the brainstorming process but did not stay longer nor participate in the coming days because of his busy engagements (see Figure 22: Participants for CD). All these three participants can be seen in the figure below, however, to keep anonymity their faces are blur (see Section 12.2.1: Na Consent Form & Section 12.2.2: Participant Signed Consent Form).



Figure 22: Participants of CD

8.1.2. ARRANGE A PLACE AND NECESSARY SUPPLIES

Because of the sponsor and RAs' familiarity with the location, the decision to organise co-creation sessions at NA office has been made. By reading different articles about co-creation and CD, I made the list of supplies and arranged them before the meeting. Furthermore, literature review paved the way for arranging some art supplies, which were downloaded, and a few were developed in advance on Adobe victor-based software (Illustrator CC, n.d.).

8.1.3. METHODS TO EFFECTIVE CO-CREATION SESSION

In order to observe participants' reactions and gain their ideas, the normal conversation took place. During this conversation, new participants, in particular, were informed about '*reasons for this study*', and presented with the slight intro of '*have done*' alongside '*need to be done*'. In order to see their reaction, a bunch of ideas, and already developed mobile apps/games were discussed e.g., Ormston et al., (2015) and Eysenbach, G. (2015) both about smoking cessation and Mueller et al., (2007) about users who are even playing the real game over distance. That was done in a way to observe participants' reactions, encourage them to think outside the box and to come up with more ideas. In addition, after observing their reaction, they were informed about what is aimed to be developed and requested to think aloud while passing their opinion freely. Thinking aloud was also audio recorded to gain further benefits, which have been mentioned above (see Section 7.2.1.1.1: Think-aloud Method during CD). The medium of thinking aloud was Urdu languages, however, NA official terms were mentioned in the English language e.g., addict, relapse.

8.1.3.1. *Collecting User data*

Brainstorming with CD participants plays a vital role in developing requirements for the MG4RA. Combined NA and similar field literature review provided an initial support for brainstorming with the CD participants to get their insights in manners that are more professional. As mentioned above, brainstorming was audio recorded, however, the recording was paused during irrelevant information e.g., smoking and tea breaks, some old stories and jokes.

All the CD participants received sticky notes with one single colour and in order to capture their feedback, the white paperboard divided into three different segments, which are Likes, Dislikes, game ideas as well as sub-categories, which emerge from sticky notes comments, was used. In addition, CDPs were requested to clarify their idea by writing on notes and placing them accordingly.

For example, CDPs liked the idea of listening to their own preferred music during playtime and filtering it to avoid unnecessary/abusive language. In addition, CDPs also liked the idea to keep users' activities history for a fair duration to monitor users' activities and stay away from those users who are not there for recovery but to gain access to RAs for various reasons and those user(s) who is/are there only to spam message(s). This process continued for two days for around four to five hours. With the passage of time, the white paperboard became the self-explanatory of an individual's participation in brainstorming by looking at the most dominant colour on it. Therefore, the participant of less colour on the white

paperboard was encouraged by me to share any idea. This was a smart way to not only motivate the participant who was unable to take part as others but also a way to continue the elaborative creative process (see Figure 23: Co-creation session). As suggested by Guha, et al., (2013) the analysis of these frequently accrued opinions will show the possible trends that can elaborate and advise directions for the iteration of the MG4RA (Co-Creation Session, n.d.).



Figure 23 Co-creation session

Furthermore, in further analysis, these sticky notes were clustered into a big and clear view of the idea within likeness, unlikeness and game concept/elements. From Guha et al., (2013) study, clustering was adopted in my study to bring those sticky notes which are similar to one another together or pave the way for merging or facilitating one another within likeness, unlikeness and game concepts/elements (see Figure 24: Sticky notes Clustering).

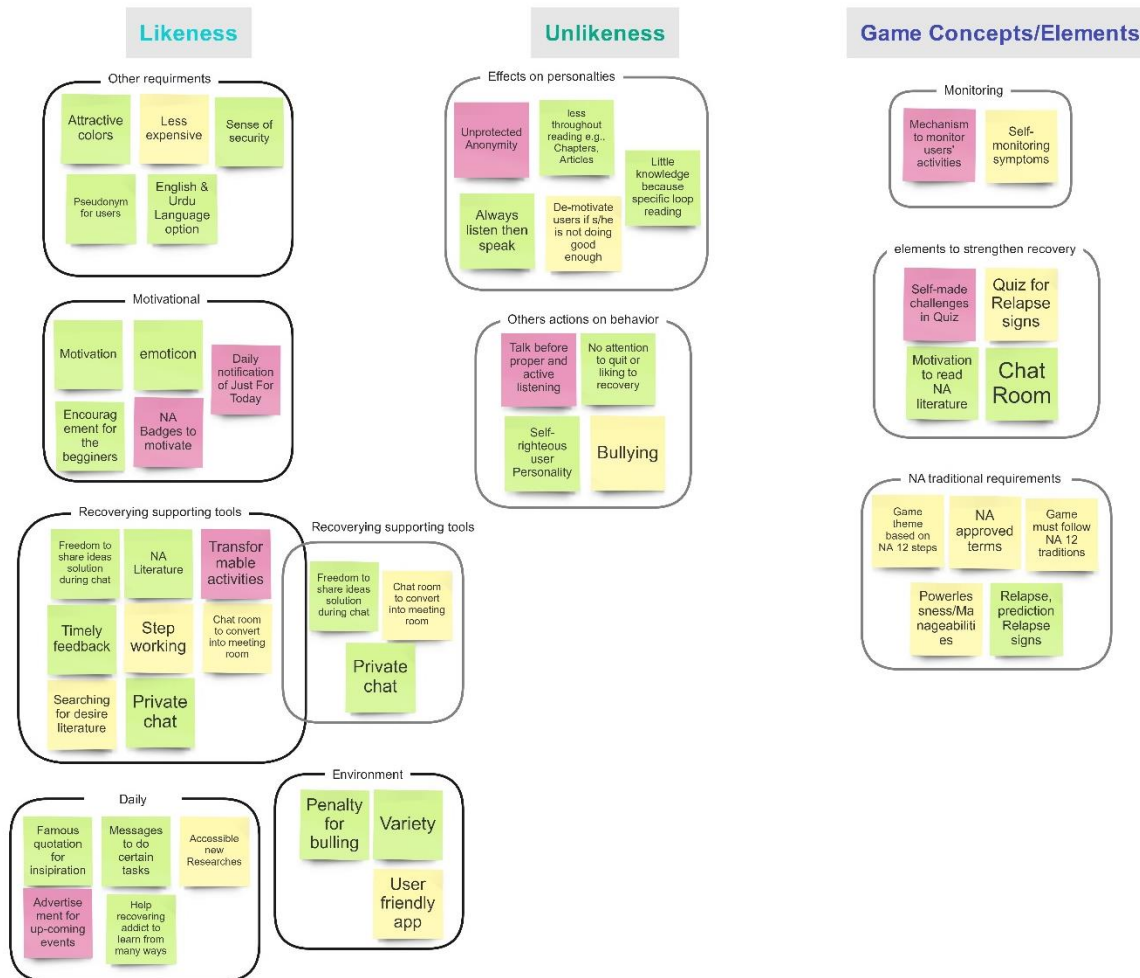


Figure 24: Sticky notes clustering within likeness, unlikeness and game concepts/elements

Cluster analysis was a useful starting point for data summarization (Tan, et al., 2006). Within the data, exclusive clustering, overlapping clustering and fuzzy clustering can be found (Tan, et al., 2006). During the cluster analysis, information found within likeness, unlikeness and game concepts/elements, was divided based on greater similarity, however there was a situation when a sticky note belonged to more than one cluster that is known as non-exclusive clustering e.g., Chat, Literature and Quiz (Tan, et al., 2006).

The labels on the clusters were given based on affiliation respectively. After clustering, the next step is to analyse and develop requirements for the MG4RA with the same CDPs.

8.1.3.1.1. Requirement developing Process

The following section contains the analysis of the data summarization. The data summarization did not only provide a more precise picture of existing data within likeness, unlikeness and game concepts/elements but also helped to develop more requirements with much more accuracy. Each requirement will be available alongside remarks during brainstorming and arguments. In this section, I will first present direct requirements obtained from clustering, and then display the analysis of brainstorming remarks and arguments to meet the requirements. Furthermore, I will also provide visualised relationship between components that will be presented in figures that are inspired from Engeström (1999). The contradiction marked with a red double-edged arrow mark and yellow double-edged arrow mark. The red double-edged arrow means that the contraction is between the components on each outer ends that has a double-edged arrow. In addition, yellow double-edged arrow means that the contradiction is between the two nearest components at the line that has a double-edged arrow.

- *The mobile game should be able to facilitate NA literature, old/new articles related to the topic.*

According to an NA sponsor (a recovered addict), after inner motivation, the recovery largely depended on the NA literature, and research articles to be mentally stimulated. NA literature is the primary source to engage in recovery with serious manners and to find a new life. Furthermore, NA literature helps users to get familiar with NA principles of the Twelve Steps and Twelve Traditions not only motivate RAs but also educate/prepare him/her for possible problems and provide answers in order to stay strong in their recovery. Moreover, CDPs would like to have articles that can help RAs to educate themselves e.g., relapse, self-monitoring, powerlessness, possible addiction diseases and symptoms. According to the sponsor, literature proves that a good reading material has the potential to divert, drag the reader away from tensions, allow relaxing, and improve the reader's memory.

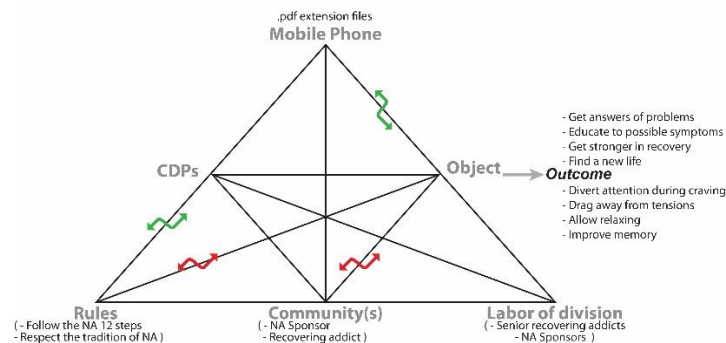


Figure 25: Vision contradictions in the activity system of the NA literature feature

- ***The mobile game should be able to send the motivational notification.***

Participants would like to receive famous NA quotes, motivational messages e.g., Narcotics Anonymous just for today (JFT) notifications like, “*JUST FOR TODAY* my thoughts will be on my recovery, living and enjoying life without the use of drugs” (NA, 2008, p. 93). In addition to literature and the emphasis on receiving messages, participants would like to be involved in various activities e.g., water intake reminder, some physical exercise reminder to increase feel-good hormones (Papastergiou, 2009), (Chiu, et al., 2009).

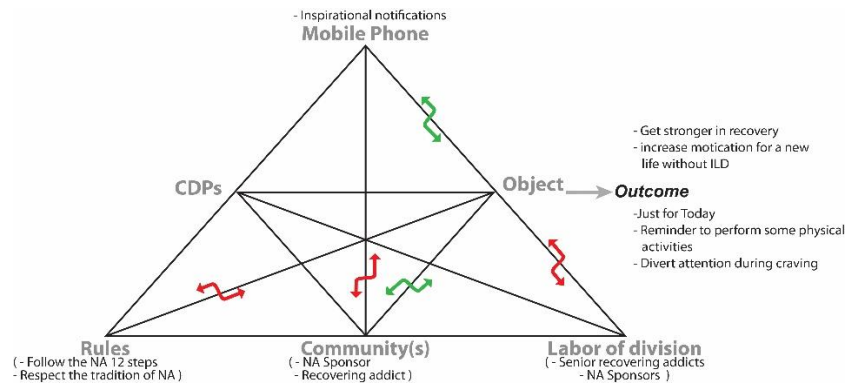


Figure 26: Vision contradictions in the activity system of the inspirational notifications

- ***The mobile game must have a variety of things to facilitate various users.***

The MG4RA must contain multiple functions in order to gain maximum visitors. CDPs claimed that allowing the game to have multiple functions e.g., chat, meeting, NA literature, relapse assessment quizzes, motivational notifications, will facilitate many users according to their desires.

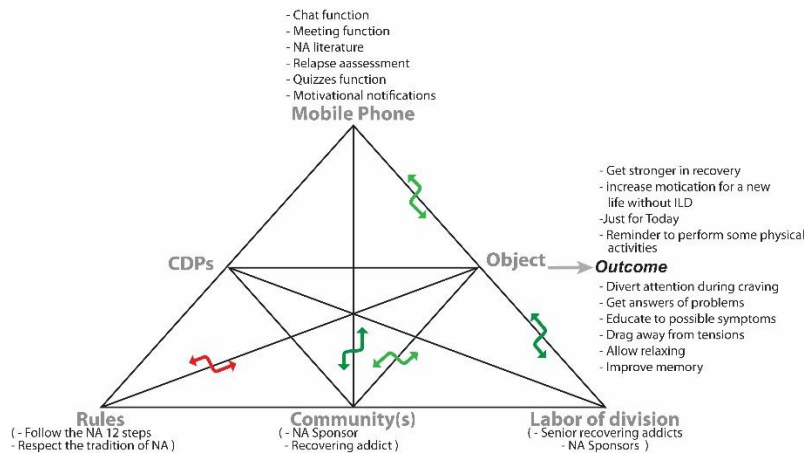


Figure 27: Vision contradictions in the activity system of the multiple functions

- ***The mobile game should be developed on NA 12 step roles.***

CDPs described the theme of the game, suggesting the stages of the game should be developed based on NA 12 steps. According to the sponsor, many RAs relapse or quit during NA 4th step because RAs found it very difficult. This could be a way to motivate RAs to complete 12 steps while playing. CDPs would like to have a quiz after reading each NA step respectively. This could work as an exercise after reading a step chapter and timely feedback can help players to convey the result of their understanding of reading.

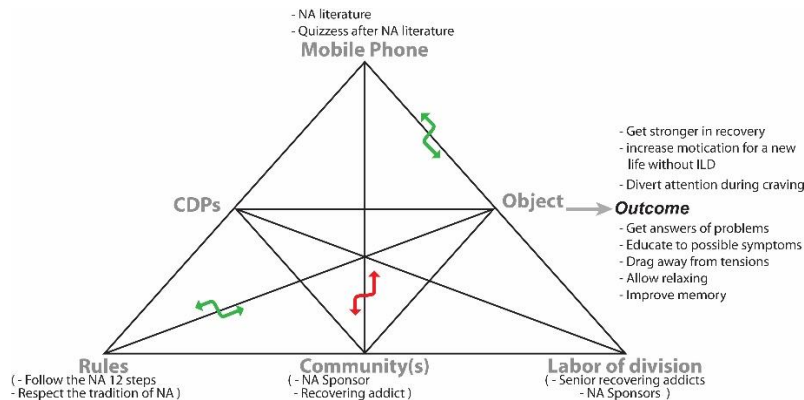


Figure 28: Vision contradictions in the activity system of the Game theme based on NA 12 steps

○ **The product should facilitate multiple Quizzes.**

CDPs would like to have quizzes on different game segments in order to retain their knowledge for the long term and transfer knowledge to other participants. This is the requirement, which is also mentioned in the second interview (see Section 7.1.5.3: Narrative of Interview 3). CDPs would also like to have the quiz about relapse and transform the meeting environment into a quiz environment.

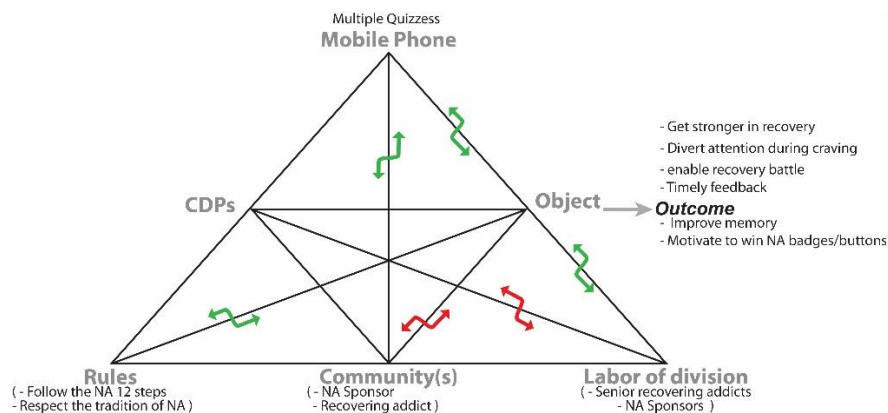


Figure 29: Vision contradictions in the activity system of the multiple quizzes

○ **The mobile game should use NA gifts to motivate players to be strong in the addiction.**

The sponsor emphasised that they use NA badges and buttons to motivate RA that is labelled with current recovery duration. NA use from day one to double digits years labelled badges. Rewarding works as a

way to keep remembering addicts the period of staying clean from ILDs. Furthermore, this also enhances the recovery battle among RAs, as described by an interviewee (see Section 7.1.5.1: Narrative of interview 1). One co-participant also stressed that game should use NA badges and buttons that are embedded in the NA logo. However, the sponsor rejected this idea and advised gaining the permission from NA head office first (Californian, USA) because they also ask for permission to introduce/start anything new. Because of the study limitations (see Section 4.3: Study Limitations), I will not use any NA logo or badge design in my study.

- ***The mobile game should allow users to generate chat rooms.***

The MG4RA must allow the user to generate the chat room with maximum 15 – 20 users. This will allow the user to discuss problems, talk in case of loneliness, and a craving timeframe. A meeting should be able to transform into a meeting with/of comparatively five fewer participants. This will allow entry into the conversation who are not looking for a meeting but to do normal conversation because of their boredom or who are trying to divert their attention.

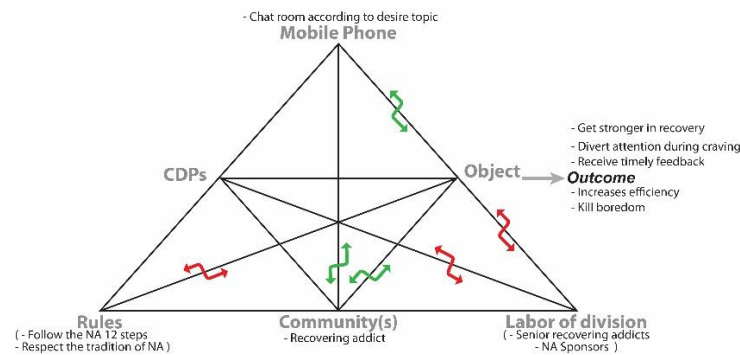


Figure 30: Vision contradictions in the activity system of the chat room according to desired topic

- ***The mobile game should allow users to generate meeting rooms.***

The MG4RA must allow the user to generate a meeting room, according to the NA tradition, for 10 – 12 users maximum. Furthermore, CDP also emphasises that even two or three users can start a meeting if more participants do not show up before the starting time. He also explained that sometimes because of various reasons, e.g., extremely hot weather, celebration, heavy rainstorm, many members do not show up and they start the meeting with the presence of 2 or 3 members, nevertheless, other members are always welcome to join them later. However, according to NA traditions, among members the meeting must have 1) trusted servant a) secretary, b) treasurer, c) group service representative d) group service representative alternative (if possible) and 2) chairperson (who conducts the meeting) before starting the meeting.

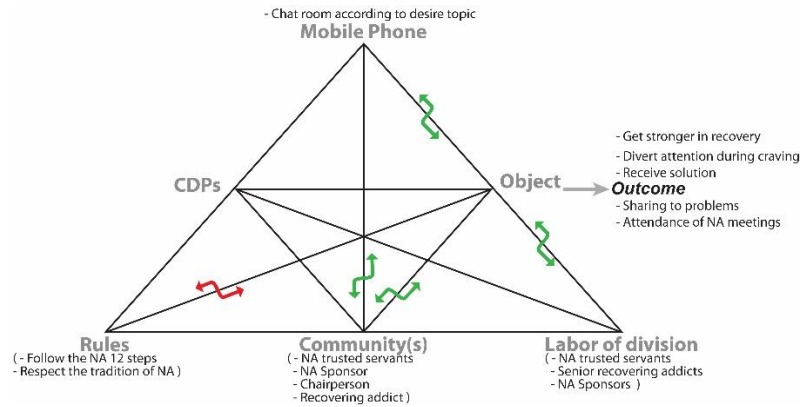


Figure 31: Vision contradictions in the activity system of the chat room according to desired topic

- ***The mobile game should allow the meeting to transform into the chat room.***

The MG4RA must allow meeting members to transform the meeting into a chat room for further discussion, the same as they go outside or do different activities after physical meetings.

- ***The mobile game should have a mechanism to stop people with undesirable attitudes.***

According to the sponsor's 23-year empirical experience, during the brainstorming, he described that there are many common personalities/attitudes among RAs, which he would not like to encounter in the MG4RA. According to him, self-righteous personalities, bullying, talkative, impatient listeners to others and non-serious attitudes towards recovery are factors that damage the meeting environment. CDPs would like to have a mechanism to stop/manage people with self-righteous personalities, bullying, motivate talk before proper and active listening. Furthermore, CDPs would like to keep the meeting and chat conversation history for a fair number of days to prevent those people who appear only to abuse and those who show no intention of quitting or making recovery.

During brainstorming, the suggestion was coined that during the meeting a game must have a clockwise period for each participant to share their views and the same member to wait for his next term. This can also motivate users to participate in a more disciplined and serious way. Users will get a sense of respect and a valued member of conversation that other people cannot interrupt during the conversation. After his term, another member can also send him smiley emotions, which can give the user a feeling that other members are paying attention to his talk as well.

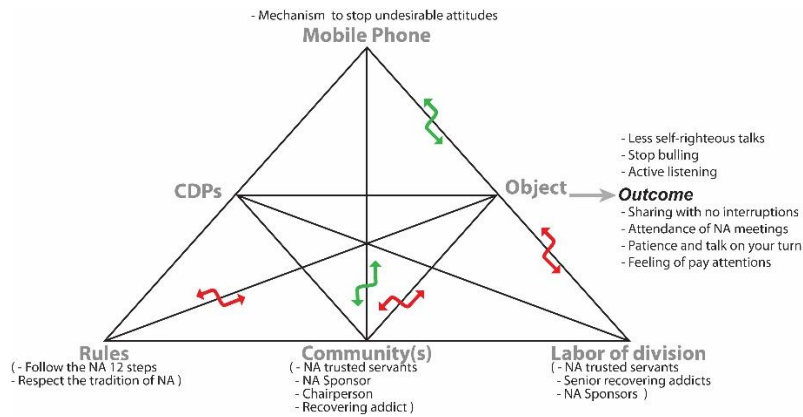


Figure 32: Vision contradictions in the activity system of the undesirable attitudes

- ***The mobile game must be user-friendly.***

According to participants, RAs do not like complicated things; it makes them nervous and can cause a relapse (depending on strength of the recovery). Users must be familiar with elements, icons based on their previous use of technologies. However, on the initial appearances of the product, a user must get info/guideline about how to use it, e.g., how to conduct a meeting, how to organise a meeting, how to transform a chat into a meeting or vice versa.

- ***The mobile game should use users' personal music library.***

CDPs prefer to listen to their own music rather than in-game music tunes. They believe people will play longer because they are also listening to their own music. In addition, this might be the factor that can motivate players to stay in the game until their favourite track(s) is not finished. One of them also argued that since the game does not have sound effects e.g., fighting, a car engine or racing sound, he will prefer to listen to his favourites which he can also change if he gets bored. Furthermore, another CDP argued that this might interrupt the participation during a quiz i.e., the buzzing sound when someone will get NA badges/button and in-game music/tune can notify users about their turn during the meeting. These arguments sound more solid and appealing to everyone, therefore, the decision to build music alongside feature that allows users to listen to their own music has been made. In addition, in-game music can dominate perforce music tracks during delay participation, a quiz and a meeting, however, participants can listen to their own favourite music during reading the literature.

- ***The mobile game must generate pseudonym names for the users and ensure a sense of security.***

The product must give users pseudonyms based on his/her first name and sure name. CDPs stated that users must not be allowed to choose their own favourite names (nickname) because many might sign in with their real ID and many might chose a name, which contradicts the ethics.

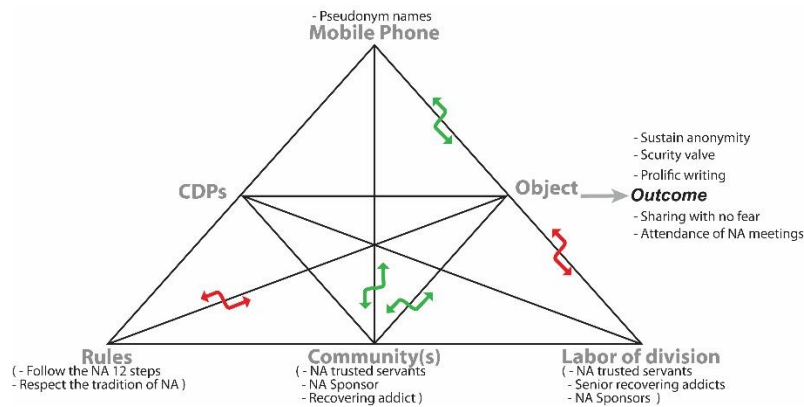


Figure 33: Vision contradictions in the activity system of the pseudonym names

- ***The game should use the English language as the standard language.***

The game must facilitate a vast majority of users. Recovering addicts join NA meetings from different areas of Pakistan. In Pakistan, there are 73 spoken languages with six being the most dominant languages and around 300 dialects (What Languages Are Spoken In Pakistan?, n.d.), therefore, Urdu is a national language (Literary notes: How many languages are spoken in Pakistan?, n.d.). Furthermore, schools' medium in instruction, all the government and court documents, streets, shops, companies' signs even contracts, use English because of the British strong influence within society. Therefore, Urdu and English together are official languages in Pakistan (Why Pakistan Is Replacing English With Urdu, n.d.). CDPs would like to have the MG4RA version in English. However, NA Pakistan is working on writing NA literature into Urdu, and when they finish translating, the MG4RA must allow users to read NA literature Urdu file that will be available in pdf format.

- ***The mobile game must use terms approved by NA officials.***

Participants highlighted that the game must use NA approved terms. Furthermore, the sponsor said that NA Pakistan is working on translating NA literature in Urdu and they got permission to use English for Urdu terms from NA Ontario Canada. Therefore, they would also like to use the same terms during the design of this game, e.g., the RA.

- ***The mobile game should show the member's digital affiliation to NA.***

The MG4RA must use digital association to NA from the day the user starts using the game. During the brainstorming, CDPs emphasised that mostly a user might use the wrong duration of their staying clean

from ILDs. However, there could be an argument that recovery is an individual's responsibility. CDPs believe that allowing users to determine their own recovery duration might demotivate other users. In reality, new RAs and those who relapsed get inspired by looking at others as an example of someone who has remained clean for many years. Digital affiliation duration could also be displayed on the mobile main screen as a reminder to come back to gain benefits from game functions and stay strong during recovery.

- *The mobile game should be able to send notifications of upcoming events.*

The MG4RA must be able to send notifications to the users of upcoming events. CDPs believe that could reduce a load of messages to those who are affiliated to NA but also other organisations, which are dedicated to the same caucus to welcome them.

- *The mobile game should have a relapse sign and prediction about a relapse.*

According to CDPs and NA literature, a relapse does not only mean taking the ILD but this is the last stage where RAs feel powerless and use the ILD (NA, 2008, pp. 77 - 86). According to the sponsor's empirical experience, it is a chain of symptoms, which end with the intake of ILDs but before that, the RA starts getting a relapse sign e.g., annoyance with anyone/anything, anger or any other emotional disturbance etc. CDPs would like to have a feature where users could read a material about a relapse and play a quiz to predict the relapse.

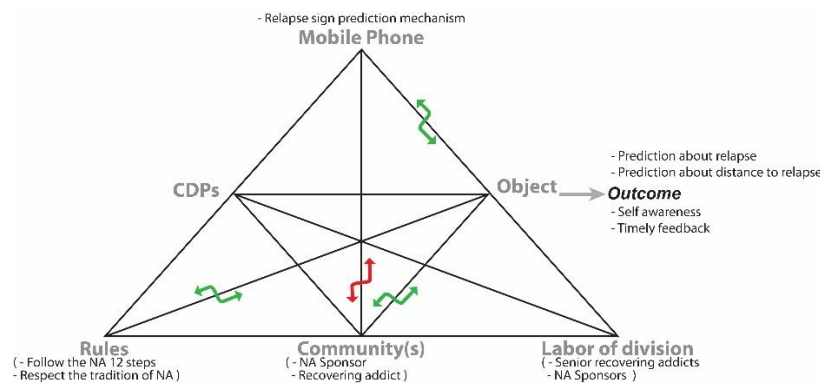


Figure 34: Vision contradictions in the activity system of the relapse sign prediction mechanism

- *The mobile game should have a self-monitoring mechanism.*

According to one CDP, the MG4RA must have a mechanism for self-monitoring symptoms. The sponsor emphasises that the user should be able to read about different symptoms and by doing so RAs can self-monitor themselves. According to Mills and Davidson (2002) hospital, family and friends are the primary

sources of information, however, in contrast to this, Phillopov and Phillips (2003) study argued that majority of adults use the internet when concerning symptoms emerge.

CDPs argued they should have a search option, where users can search for the specific symptom(s). However, a fair amount of literature maintained that the search option on the disease-related platform shows many potential disadvantages e.g., misuse search terms could influence what the user finds, users might end searching for serious symptoms (Nikonkobe, 2017), (Aiken, et al., 2012). In addition, the user can get an appropriate response or fail to get an answer (Scullard, et al., 2010), which could increase anxiety (Aiken, et al., 2012). Furthermore, the sponsor also argued that if any user is not doing well, self-monitoring can demotivate the user that can also increase anxiety.

○ ***The mobile game design should have attractive colours.***

CDPs argued that RAs are attracted to colours but cannot generalise about colour preferences. One of them agreed that he would be motivated to play the game because of attractive colours' combinations, e.g., blue, red, and green, especially during the meeting timeframe and quizzes. According to Dias et al., (2009), people tend to be attracted to some colours because of some key factors e.g., personality, the indecent condition of life, unconscious mental process. In western culture, yellow is the colour of light; blue, being the colour of water, is also the favourite of half of the western population that transmits calmness and harmony. In addition, red is associated with heat, willingness to act, and the colour of prohibition, danger, love and passion.

○ ***The mobile game should be able to send emoticons during a chat and a meeting.***

CDPs would like to send and receive a graphical representation of emoticons e.g., happy, grinning, toothy, laughing with tears, a smug and blushing smiley face, alongside an unamused, helpless, sad and worrying face, which can be used to express a feeling/mood. They argued that emoticons could be a wise way to notify anyone about other users' emotions during quizzes, a chat and a meeting timeframe.

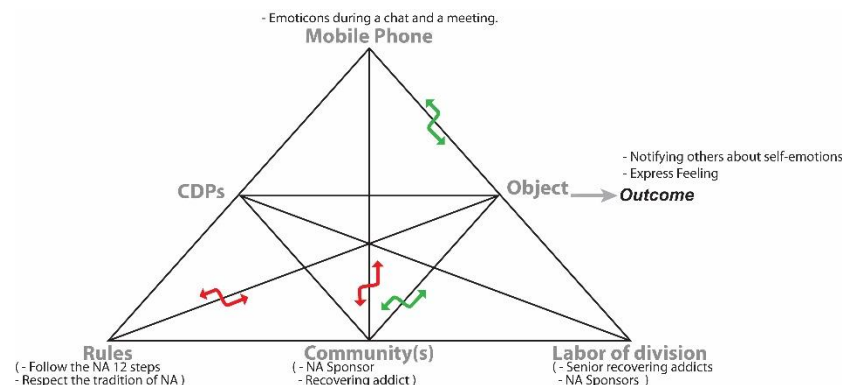


Figure 35: Vision contradictions in the activity system of send emoticons during a chat and a meeting

- **The mobile game should be able to notify the user about anniversary(s) while active.**

According to NA traditions, one tradition is to celebrate a member's birthday/ILD-free year. All the three interviewees mentioned that unconditional love is what motivates them to visit NA. In addition, they also claim celebrating anniversaries is a way to convey to any person that he/she is also valued. When participants are active in the game, the MG4RA could notify other members by sending a message in which other members can convey their wishes alongside emoticons.

- **Mobile game activities should be for free or less expensive.**

CDPs explained that the MG4RA should be free to play. They stated that members are already paying for visiting NA meetings e.g., travelling expenses, entry tickets to the seminars and to the parks. In order to participate in virtual meetings, chat and to play a quiz, users will need to buy a good amount of data on a mobile or Wi-Fi connection, which is very expensive (around 150 to 300 DKK per month) in Pakistan. NA is a non-profit organisation, therefore, an NA game should also be free for the users, at least a fair amount of the timeframe for the promotion. In addition, access to all the features free of charge will attract members to visit and gain benefits from the game's utility. In addition, they also believe that by doing so, the game could also play a vital role in carrying the message of recovery and promoting NA world wide services.

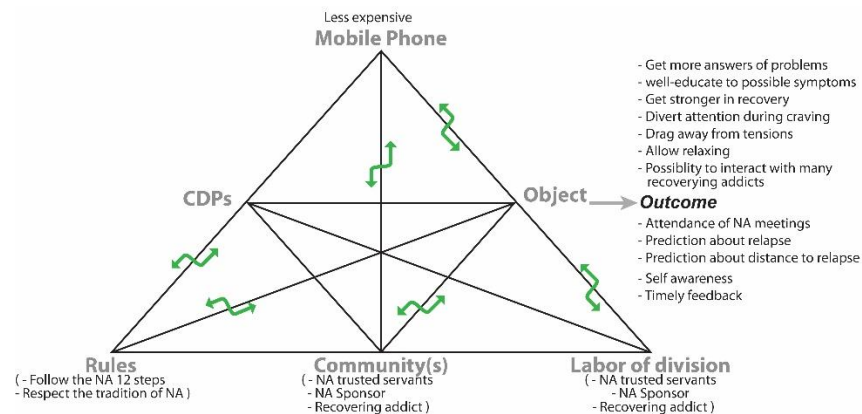


Figure 36: Vision contradictions in the activity system of for free or less expensive MG4RA activities

- **The mobile game should have a 'self-made quizzes' option.**

Co-participants emphasised that during the meeting, the game could transform into the game that could allow meeting top hierarchy members e.g., a sponsor, an organiser of the meeting to use self-made quizzes among other members of the team. By doing so, members could do more self-assessment of the new knowledge discoursed during the meeting or revise their knowledge.

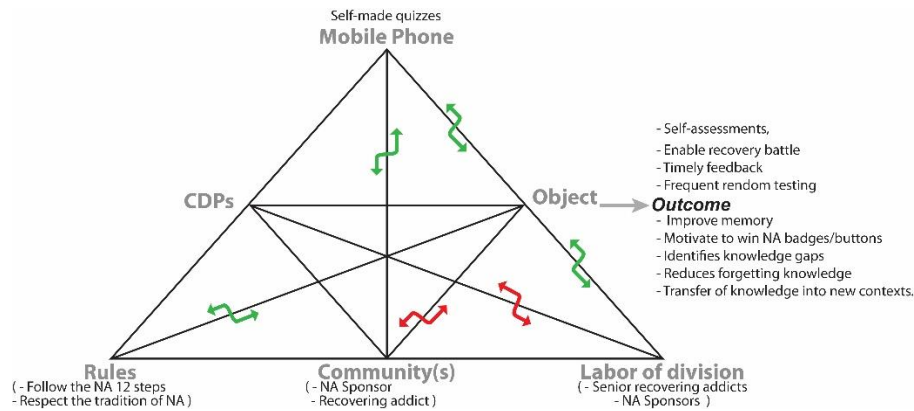


Figure 37: Vision contradictions in the activity system of self-made quizzes

- ***The mobile game should have a mechanism for managing powerlessness.***

Co-participants stated that NA badges, buttons, friendship, unconditional love and a number of attended meetings' timeframe are what gives them strength to be strong during their recovery. All interviewees claimed that when they feel powerlessness, their recovering friends or sponsors reminding them about their struggle in the past and how much they have achieved during recovery, give them the motivation to fight with their powerlessness. If the MG4RA had a mechanism, by means of which other users could view each other achievements, the number of NA badges and coins, read other people stories, it could influence the users' behaviour(s). Furthermore, this will enhance the recovery battle within members as mentioned in the first interview (see Section 7.1.5.1: Narrative of Interview 1).

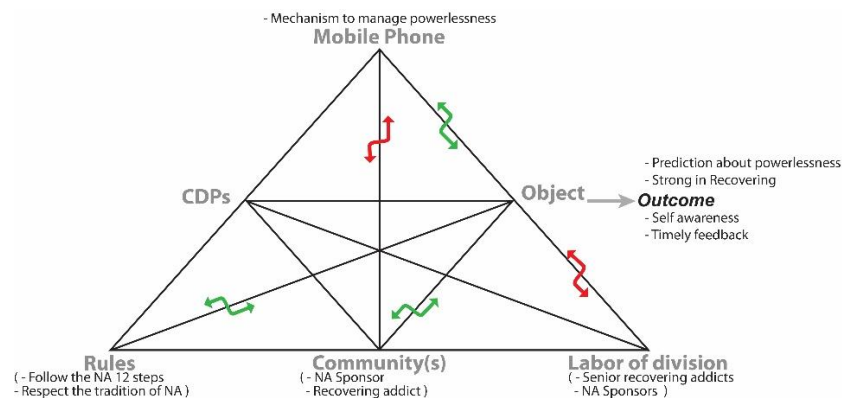


Figure 38: Vision contradictions in the activity system of manage powerlessness

8.1.3.1.1.1. ***Requirements list:***

Below is the list of the requirements that is divided into two sections: must to have and the nice to have requirements. Must to have requirements are those which are believed to be necessary to include in the

first iteration. In addition, nice to have requirements should be included in future development or in updated versions. The decision to split the above requirements into two phases was made during the brainstorming process with the CDPs. During this brainstorming, discussion with CDPs about requirements took place. Then, CDPs received a printed version of the above-mentioned requirements marking A and B next to the requirements. Later, requirements were selected democratically (requirements with most 'A' for 'must to have' and requirements with most 'B' for 'nice to have').

Must to have requirements

- *The mobile game must facilitate NA literature, old/new articles.*
- *The mobile game must have a variety of things to facilitate various users.*
- *The mobile game must be developed on NA 12 step roles.*
- *The product must facilitate multiple Quizzes.*
- *The mobile game must use NA gifts to motivate players to be strong during recovery.*
- *The mobile game should allow users to generate chat rooms.*
- *The mobile game must allow users to generate meeting rooms.*
- *The mobile game must allow the meeting to transform into the chat room.*
- *The mobile game must have a mechanism for stopping people with undesirable attitudes.*
- *The mobile game should be user-friendly.*
- *The mobile game must generate pseudonym names for the users and ensure a sense of security.*
- *The game should use the English language as the standard language.*
- *The mobile game must use terms approved by NA officials.*
- *The mobile game must be able to send notifications of upcoming events.*
- *The mobile game must have a relapse sign and prediction about a relapse.*
- *The mobile game design must have attractive colours.*
- *The mobile game must be able to send emoticons during a chat and a meeting.*
- *The mobile game must be able to notify the users about anniversary(s) while active.*
- *Mobile game activities must be for free or less expensive.*

Nice to have Requirements

- *The mobile game should use users' personal music library.*
- *The Mobile game should use motivational notification.*
- *The mobile game should be able to send the motivational notification.*
- *The mobile game should have a 'self-made quiz' option.*
- *The mobile game should have a mechanism for managing powerlessness.*
- *The mobile game should have a self-monitoring mechanism.*
- *The mobile game should show the member's digital affiliation to NA.*

For the first iteration, after tight scrutiny, the most relevant requirements have been set. My goal with the first iteration is to provide RAs with a tool to support their recovery, therefore, as mentioned above, must to have requirements have been considered as the core requirements to fulfil my goal and to answer RQ3

(see Section 4.1: Research section (RQ3)). In order to grasp the flow in the MG4RA, the requirements are presented in a number of use cases that will bring more clarity to understand and support development process of the first iteration. In addition, use cases will elaborate on the role of theories and how, in the first iteration development, these theories are in line that has been chosen for this study.

8.1.3.1.2. Use Case

In order to understand the use of the MG4RA alongside specification on different actors and their goals, a use case model is presented. The use case model contains a narrative, diagrams that will explain the roles of the MG4RA's actors. The use case model will provide essential help to understand the user's needs with more clarity. According to Larman (2005), any individual with his/her behaviour involved is an actor, therefore, in use cases sponsors, RAs, and even a MG4RA itself, become an actor. In this context, I chose RAs, sponsors, and the MG4RA in the actor's list (See Table 2: Explaining the actors' goals). Any stakeholder who interacts with the MG4RA to achieve the goal(s) is a primary actor (Cockburn, 2000). It is worth mentioning that goals are not in order, this is just to drag reader attention toward what I attended to achieve. In my designed MG4RA sponsor(s) and the RAs are the primary actors.

Actor	Goal
<i>Sponsor</i>	<ul style="list-style-type: none"> - Provide primary NA literature in the Urdu and English language. - Provide articles (secondary literature) and keep them updated. - Send motivational notification to the other users of the game. - Prepare quizzes for each step respectively, and for a relapse prediction. - Prepare upcoming events' notification(s). - Receive and answer users' reviews/questions. - With the passage of time change quizzes' questions. - Monitor activities and prevent unnecessary activities. - Allow users to access the game. - Give the users a warning(s) with appropriate behaviour. - Convey unconditional love to other users' by sending emoticons and anniversary wishes. - Generate and participate in the weekly meeting. - Participate in a chat with other users.

<i>User</i>	<ul style="list-style-type: none"> - Read NA literature and articles. - Provide the user's name to generate pseudonyms. - Play NA 12 key step/relapse quizzes. - Chat with other RAs. - Send motivational notification to the other users of the game. - Write and send questions/reviews to the sponsor. - Participate in the meetings. - Be able to transform a chat room into the meeting. - Generate a chat/meeting room. - Complain about abusive/unnecessary activities. - Convey unconditional love to other users' by sending emoticons and anniversary wishes.
<i>MG4RA</i>	<ul style="list-style-type: none"> - Give access to NA primary and secondary literature. - Give the RAs badges and buttons. - Calculate and keep results of RAs. - Allow users to generate chat/meeting rooms. - Give access to the chat/meeting rooms. - Allow users to transform their activities according to their desires. - React on sponsor(s)' requests (e.g., block RAs' with unnecessary activities). - Notify other users about anniversaries. - Generate pseudonym names. - Convey events to the users. - Convey emoticons during a chat and a meeting.

Table 2: Explaining the actors' goals

A use case scenario is an interaction between an actor and the MG4RA under consideration and specific order of action (Cockburn, 2000). The scenario sets a path through the use case e.g., in my case scenario where a RA wants to create a meeting room, or where the RA wants to participate in the conversation in a chat room or even a sponsor wants to send notification about a coming event. Just to convey benefits of the use case, I only made one use cases for the MG4RA. The first use case is a narrative about 'RAs' *participation in the meeting*', and the second use case is a narrative about '*a chairperson preparing the meeting*'. I chose this use case narratives because of the dominant factor in the interviews, during brainstorming process and because of them being the least similar to the current NA practice.

Use Case 1: Recovering addict participation in the meeting

Primary Actors: Sponsor(s)/ RA(s).

Scope: MG4RA ability/capacity to give users access to participate in the meeting.

Goal: Recovering addicts participating in the meeting to discuss their problems and seek solutions, learn from others' sharing, and get inspiration.

Stakeholders and Interests:

- Chairperson wants to arrange a meeting to welcome other RAs, to support them with advice and recommend literature materials during the meeting timeframe.
- Recovering addict attends the meeting to follow NA key steps, traditions, learn from other participants' sharing (thoughts/problems), take advice from senior members e.g., members from trusted servants and send emoticons to express his/her feelings and show unconditional love.

Precondition: Recovering addicts already have access to the MG4RA.

Minimal Guarantees:

- Recovering addicts share thoughts on his/her turn within the given timeframe.
- Recovering addicts get fair time to share their thoughts equally.
- Each RA gets multiple opportunities to share thoughts.
- Recovering addict gets the option to transform a meeting room into a chat room for further discussion after finishing the meeting timeframe.

Success Guarantees:

- This will allow RAs to participate in the meeting; get to know each other's problems within the meeting room.
- The meeting room will also allow the RA to express his/her feelings respectively.
- Meeting room protocols will allow the RA a fair duration to read other members' sharing(s) on their turn with equal time
- Members in the room can celebrate the anniversary (if any) and spread the unconditional love by sending emoticons to others.
- Recovering addict will receive feedback from NA trusted servants alongside the feedback from other participants who have encountered similar problems.

Main success scenario:

- Recovering addict will receive unconditional love from other members.
- Recovering addict can feel that he is not alone who has these problems.
- Recovering addict will receive feedback from NA trusted servants and from those who have faced a similar problem.
- Recovering addict can get inspirations from other members' stories and can learn about methods they are using or have used to stay stronger during their recovery.
- Recovering addict can express his/her feelings/problems freely but with mannerism.
- Recovering addict can stay stronger during their recovery and get the motivation to stay away from ILDs.

Extensions:

Recovering addicts and trusted servants can read and write their thoughts, send emoticons to each other.

The course of events:

- Recovering addict enters the meeting room.
- Recovering addict introduces himself i.e., Hi, I am Mr X and I am an addict and continues to express his thoughts for the given duration.
- When RA introduces himself, other members simultaneously send him emoticons, welcome him, and read his thoughts for the given timeframe.
- After a timeout for sharing, RA read others' thoughts.
- When one circle of thoughts is over, member(s) from NA trusted servants i.e., sponsors, treasurer or other experienced members express thoughts or give advice about problems.
- The same RA waits for his second turn until everyone has finished with his or her thoughts.
- If the meeting clock still has time, the third or even the fourth circle of sharing/giving advice will continue equally, members will be welcome to convert the meeting into the chat room to discuss things further.
- During the chat, members in the chat room share their thoughts whenever they like, but do not use unethical language.
- Likewise, during the meeting, chat members can also send emoticons to others to show their attention and care for each other.
- If someone uses abusive language or shows a self-righteous character, other members report about his/her behaviour.

8.2. *Development of the first prototype*

Before being directly involved in the first prototype, CDPs were exposed to both the prototype and its usefulness for the development. After the introduction session, both participants were requested to draw their thoughts about the MG4RA on paper within a certain timeframe. In this session, I provide them with support as a reminder of '*must to have requirements*' and some printed signs with guidance how they can utilise in their design i.e., dialogue sign, user, pictures, mobile icon etc. After this session, one participant was able to draw his thoughts about the meeting for this game, whereas another participant who seemed to have no idea about the design drew the navigation of NA literature feature that is illustrated in figure 39 below. This approach also displays the usefulness of the CoP theory and how participants regard designing the game activities individually and as a group with mutual understanding.

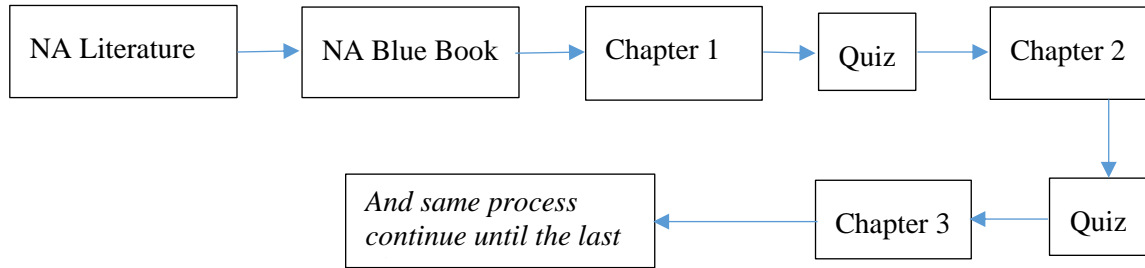


Figure 39: second participant's participation in prototype development

After expressing individual thoughts, they were invited to join me in the development of the first prototype that not only enables the use of the community of practice theory, but also the AT (the 3rd generation of AT) where we gathered different thoughts into one agreed thought to reach our common goal.

8.2.1. FIRST PROTOTYPE

In order to facilitate maximum users during brainstorming, multiple features were selected by analysing 'must to have' requirements. However, to provide users ease in interacting with the MG4RA, the decision has been made to merge some features with similar features e.g., NA literature and articles. In addition, some features were considered not included by looking at their usefulness with the support of literature relevant to the topic arguments i.e., a search option in the MG4RA and self-diagnose mechanism where users can search for information about health. As a researcher argued, a search option comes with different disadvantages such as the misuse of search terms, getting nothing or inappropriate results that can influence the user or might end searching for serious symptoms and increase anxiety ((Nikonkobe, 2017), (Aiken, et al., 2012) (Scullard, et al., 2010)). During the design, I made sure Nielsen's ten heuristics were used in the entire development process (see Appendix, Section 12.7: Design Heuristics). Nielsen ten heuristics will direct the design towards its high degree usability (Dix, Finlay, & Beale, 2004). After finalising features, we developed our first MG4RA index prototype that is mentioned in figure 40 below. This page could also be described as the 'MG4RA's landing page' where the user will have multiple options to choose from according to desire/certain behaviour. The index page is built with the great inspiration of Microsoft Windows 8 version.

However, in this study few but the most central prototype feature after the brainstorming will be presented e.g., literature, quizzes, meeting, chat alongside their navigations from the index page. To provide the user with the ease during the interaction with MG4RA e.g., when using meeting feature, playing the quiz, the MG4RA interface will rotate as the user will rotate his/her mobile phone. Order of

the features were not randomly but were selected democratically. The decision has been made to only utilise them on the index page that gained the maximum vote. (i.e., 2 out of 3)

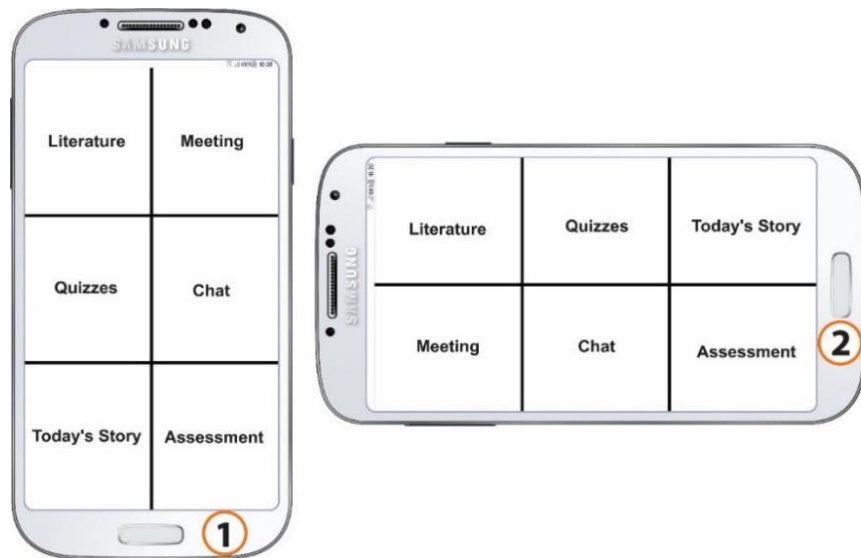


Figure 40: Index page of MG4RA

After creating the index page, participants decided to design the literature feature of the MG4RA. After landing on the index, if a user's desire is to read literature, by clicking on the literature section on the index the next page will load, where the user will have two more options. This section is a combination of two 'must to have' requirements, where CDPs wish to have not only NA reading material (Figure 41) but also different articles (Figure 42: research papers) uploaded by the NA trusted servant(s).

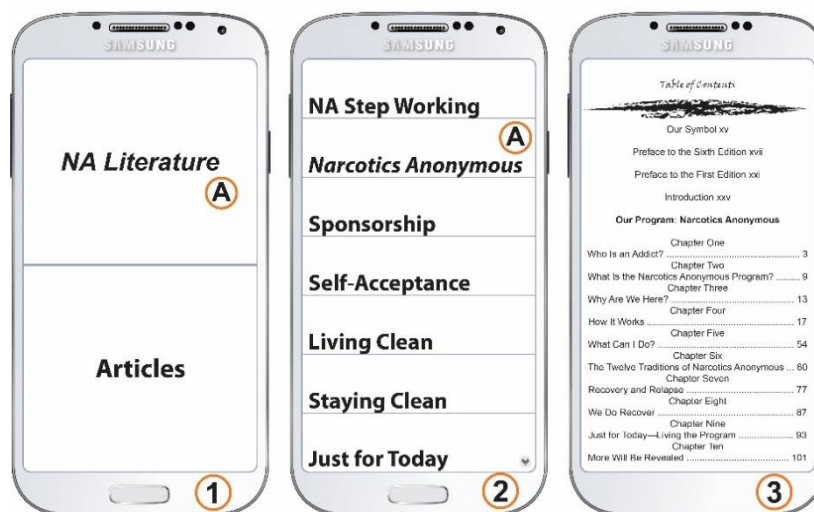


Figure 41: Literature feature in the MG4RA

After clicking on NA literature feature, the user will have a vast collection of NA literature. The user will have the scroll up and down option to check additional NA literature available. Furthermore, figure 42, section 2 is an illustration of how the user will get access to different types of articles alongside (section 3) the preview of a chosen article from the available article. It is worth mentioning that NA does not have any mechanism that can explain to us which book is mostly read/viewed, therefore, books title were selected randomly.

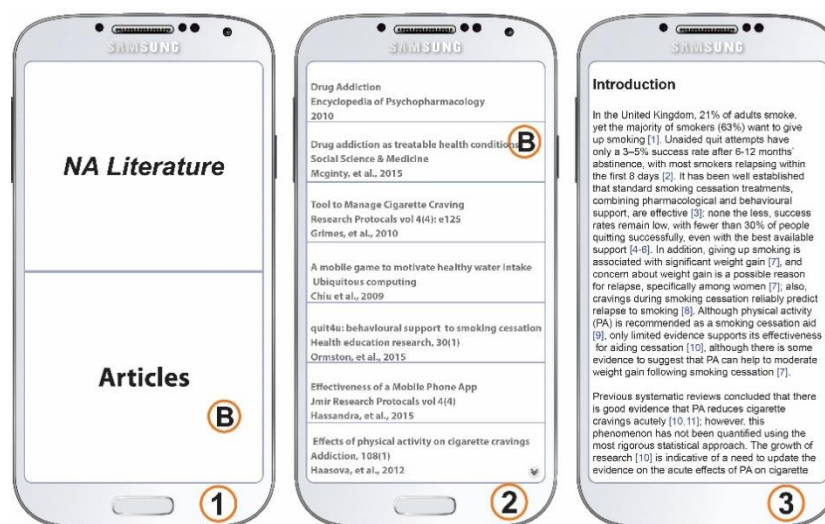


Figure 42: Article feature in the MG4RA

This part is aimed towards those readers who wish to read more than NA literature to support their recovery and stay clean. CDPs believe that availability of researched papers will play a vital role in increasing further awareness/motivate users (RAs) e.g., physical activity, healthy food, water intake or even sleeping habits.

Attending meetings plays a vital role in any addict's life. According to the sponsor's empirical experience, meetings, after inner motivation, play the most convincing role in anyone's recovery. NA organise weekly and monthly meetings alongside the annual convention when RAs are welcome. The sponsor suggested having more meetings on the MG4RA when experienced members' availability will provide support for those who are seeking a solution(s) and feeling powerless confronted with their swings of mood and uncertain behaviour. During CD, the sponsor who organised, facilitated the meeting and RAs provided helpful reasons for more than four meetings in a month to facilitate maximum users who seek solutions. After brainstorming, we established six features of the meeting that are illustrated in figure 43 section 1. After landing on screen 1, the user will have multiple choices to enter the meeting

according to his desire. This section also provides additional details i.e., the topic, the organiser's ID, the number of members participating and the amount of time to finish. By looking at such details, the user will determine his participation. Section 2 offers an elaborate choice to participate in the meeting that will take the user to the meeting point where participants are expressing their thoughts according to the topic. Section 3 is an illustration of the participant's (A) sharing timeframe. Each coloured (navy blue to red) circle has a 15-second span and the next colour is in-line. This is to remind the participant to finish his thoughts finishing with the red circle.



Figure 43: Article feature in the MG4RA

However, it is worth mentioning that generating the meeting feature (1-B), on the meeting menu (1) will empower any user who wishes to continue or chair a new meeting on his desirable topic and affordable timeframe as illustrated in section 4. This sub-feature is one of most dominant requirements during CD participation, where participants emphasised that many RAs excuse not attending NA physical meeting and wish to have late night meetings because of their work/personal engagements. This will also allow users who are unable to be consistent in their meetings to participate or generate a meeting according to their availability. Furthermore, it is worth stating that only monthly and weekly meetings will be attended by the members of NA higher hierarchy.

According to the third interviewee, by doing a quiz RAs can learn better and from others as well. During weekly NA meetings, a quiz enables the recovery battle that motivates members to do a proper reading of NA literature to perform better. In the MG4RA, multiple quizzes which are available will allow the user(s) to test his/her knowledge by playing 'single player' quizzes (Figure 44). According to CDPs, a 'single player quiz' should not reward a player with any badges and buttons but should only notify about

correct answers. As figure 44 in section 2 shows all 'B' categorised feature is single player quizzes and timely feedback will help a player to assess his/her knowledge of NA literature.

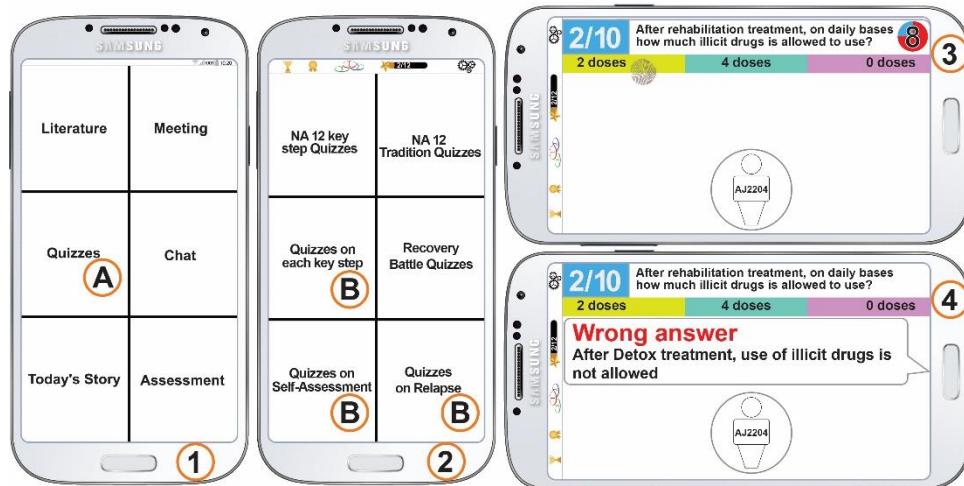


Figure 44: single player quiz

In addition, after getting an expert in NA literature, the user can also enable the recovery battle by playing with multiple players as illustrated in figure 45. By playing with other experts, players can revive their previously learnt knowledge, make themselves stronger in their recovery and win badges and buttons.

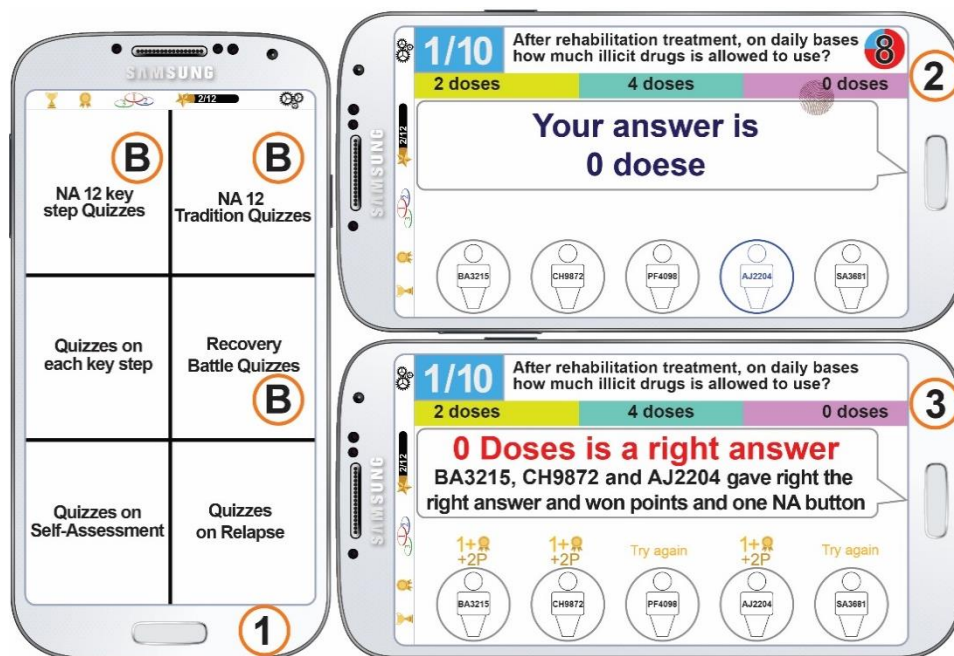


Figure 45: Multiple player quiz

As interviewee 3 stated, NA recovery battle increases confidence that comes by observing other RAs e.g., how much he has come along in his recovery, how many chapters he has read and I have read only half as much as him and he is stronger in his recovery(See Appendix: Interview 3 narrative).

After the meeting, as their normal/regular practice, users can transform the meeting into a chat room or participate in different chats for further discussion or according to their desirable topic.

Similarly to a few other requirements, this chat feature is also the combination of three core requirements i.e., users can transform their meeting into a chat for further discussion and users can chat according to their desirable topic, and block any user who is using abusive language or any user whose behaviour is inappropriate e.g., self-righteous behaviour, or a demotivating user, especially when multiple users complain about it.



Figure 46: multiple chat options and illustration of conversation

According to CDPs, multiple chat options is the third very strong feature in this game (figure 46) since it will allow the users to come anytime and discuss their problems, kill their boredom, divert their attention during the carving timeframe, or change their behaviours. However, a chat room could also be that place where people gain real access to each other, therefore, it is also important to have the chat history backup for the fair duration. During brainstorming, one participant mentioned a very sensitive issue that was also taken very seriously during the development of this MG4RA. According to that participant, he witnessed someone who pretended to be a RA but in reality, he was a drug dealer. Since this could be a perfect platform where dealers can gain access to a large number of those who used to take ILDs, such people can demotivate RAs and can gain access to sell their ILDs. Therefore, it is important to keep the chat history

for fair duration and if multiple users complain about someone's activity, the MG4RA will instantly stop such person from future use by blocking him/her until he/she resolves the issue with the sponsor(see figure 47).



Figure 47: illustration instantly blocked user activities

This option will also focus on those who conduct the conversation with a self-righteous attitude or demotivate other people with their bias opinions because of their week recovery or those who relapse. Furthermore, this option will also develop discipline while conversation. In addition, will also provide essential help to encounter who pretend to be RA but in reality want to gain access to many RAs. In order to regain access complained person must contact to NA trusted servants to resolve the issue.

9. Discussions

This chapter is a part of DBRm's 'Reflection phase' (see Section 3.1.4: Reflection), where I will discuss the results of the study concerning what I found according to research questions that are as following:

RQ1: What reasons force a RA to try ILDs?

RQ2: Which ILDs are RAs more likely to use to get satisfaction during the powerlessness timeframe?

RQ3: Which elements are required to build a game to motivate addicts to health promotion and engage in their environment in order to change their behaviour during the powerlessness timeframe?

In addition, the way these research questions were addressed to answer the problem statement of this thesis will also be analysed.

“How a game should be designed to change recovering addicts’ behaviour, motivate to health promotion, in order to support recovery process and build a community to support one another.”

The primary aim of this study was to investigate how a game should be designed to change RAs’ behaviour, motivate to health promotion, in order to support recovery process and build a community to support one another. In this section, I will discuss to what extent this goal was achieved, alongside potential implications for the process applied.

Decision has been made to apply DBR to achieve the goal of this study. DBR enhances both practice and theory, provides a broad way to stepwise investigation, analysis and design that is theory-driven. On DBR first phase (context), the desk research which was done was unable to answer ‘RA(s)’ in the context of Pakistan. The lack of answer on literature review and the refusal from NGO or recovery centres paved the way for self-investigation where I developed three research questions (see section XXXX research questions). In order to answer these research questions, RAs were consulted to gain information on their addiction history, feelings and what made them powerless when confronted with ILDs alongside their ILD(s) of choice.

Furthermore, Engeström’s second-generation AT model enabled me to develop and analyse the RAs’ narratives’ social/joint elements in the activity system alongside the change of drive forces. Furthermore, AT model, provided a detailed understanding of each action that happened inside each section. The discussion with RAs provided not only answers to RQ1 and RQ2 but also valuable information that

educated me in those aspects e.g., the importance of meetings and literature among RAs during their recovery alongside strategies which are adopted to stay stronger in their recovery, that later supported me to CoD with participants of the same community.

The AT as a theoretical background guided the development towards the analysis and on DBR second phase (Lab). CoP guided the selection of the method (CoD). CoD merely utilised the CoP theoretical background and the majority of Wenger's CoP 14 indicators further expanded the framework of the AT second generation for the single RA to multiple RAs' group. The CoD focused mainly on answering RQ3 and transforming physical activities into digital activities that allowed NA treasurers and RAs to chair meetings on their availability, to share and communicate with each other in the meeting feature. This will increase connectivity, attendance of the meeting, the ability to understand each other problems, the amount of their sharing and solutions that will contribute to their recovery strength. After meetings, the desire to have a conversation on addiction was supplemented with the chat features that allowed users to discourse their problems more quickly, and a timely feedback/solution and opportunity to talk with RAs during craving timeframe that can trigger at any moment.

Virtual meeting features are believed to benefit many RAs who are unable to reach any NA meeting point because of their distant locations, and because of busy activities (e.g., personal activities work and educational timetable). Thus, the mobile game achieved its goals by facilitating by means of arranging and participating in meetings, while NA treasures and other RAs presence provided their support for the problems shared by RAs.

Literature review not only allows to discover the potential of mobile games with the study domain but also to focus on those elements that were utilised in order to discover the potential by any means. In addition, literature review also provides help to direct the aim of the study and best-fitted methods to collect and organise the data to strengthen the arguments. It could be argued that data could be strengthened by gathering more generalizable empirical knowledge through including more participants in the qualitative method. However, due to study limitations and in the light of researchers' arguments that qualitative research method uses a smaller number of the participants (Bryman, 2012) and will collect their textual data until it starts overlapping (Campbell, et al., 2013). The analysis of the interviews also indicates that the number of the interviews for this study was sufficient because maximum textual data overlapped except a small portion that differs e.g., choice of ILDs, rehab treatment that is deeply connected to interviewees' financial status.

DBR model proves to be a fine to shape and guide the study. However, it does not support this study fully. I found it little confusing in between Lab phase and Experiment phase. As DBR model illustrates a

linear circular process, results of the usability test can yield to the new requirements that might require analysis once more even desk research i.e., literature review about possibility(s) alongside supportive arguments. As Dix et al., (2004) argued, “Humans are complex and cannot expect to get designs right first time” therefore, formulating evaluation is needed (Dix et al., 2004, pp. 196). Based on my knowledge, recommendation could be requested to have diverse (reverse circular) approach within four phases connections that will pave the way for revisiting the previous phase and keep on doing design cannot get any better as illustrated in figure 48.

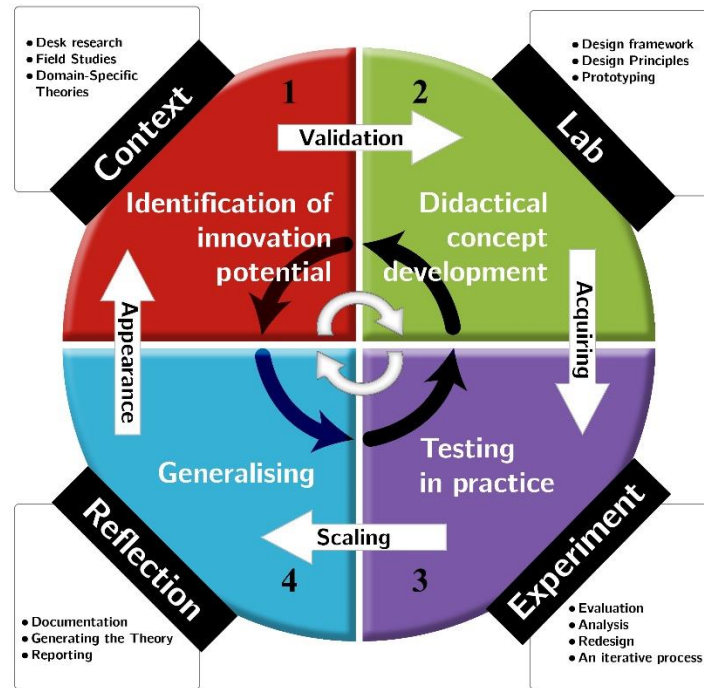


Figure 48: DBRm developed by the author

9.1. Future work

In this section, I will suggest and discuss what could be done in the future, to create a fully functional mobile game that can be applied by the NA Treasurer(s) and the RAs. The above-mentioned solution is based on most prominent (must have) requirements that were selected democratically within the CoDPs.

Although the recommended design was developed collaboratively, there might still be a room to improve. In order to do so, I will conduct the usability test that will provide essential help with identifying potential errors and determining how the participants are satisfied with the mobile game. The usability test will consist of 2-5 participants who did not take part in CoD. The decision of not including CoDPs in the usability test has been made because of their familiarity with the tasks since they participated in developing the tasks. I will use the think-aloud method, where I will ask users to perform a number of tasks (Dix et al., 2004). In addition, this will enable me to assess where participants are struggling most to complete the tasks, and task(s) completion rates. The usability test results (list of faults) will be analysed and the errors will be fixed by redesign and development of the second iteration (Dix et al., 2004). It is recommended to keep on doing until the design cannot get any better (Dix et al., 2004), however, because of the limited timeframe, it will be harder to determine the number of iteration.

The development of the mobile game is not in the domain of this study, however, if required to develop a fully functional and usable game, coding must be performed. It is worth mentioning that there are few online and offline programs to develop the game that can reduce development time and cost to some extent as these programs only offer limited development (e.g., functional buttons, links between different pages).

After the development, user-testing must be performed in order to find the key issues of the fully functional mobile game. After fixing the bugs, the game could be played by multiple RAs. In order to collect, analyse and report the user's behaviour, telemetry could be applied to collect data from the servers (El-Nasr, Drachen, & Canossa, 2013). Raw telemetry data can reduce amount of qualitative data to yield the features' likeness and dislikeness among RAs. Raw telemetry data can be transformed that can provide support to determine order of the literature, name of the meeting/chat room or even what function is highly and less in user in the MG4RA. This fruitful information can be used to update the requirements of the MG4RA and develop a new iteration with more popular features.

10. Conclusion

This chapter is a part of DBRm's 'Reflection phase' (see Section 3.1.4: Reflection). As emerged in the analytic procedure, findings that were gained by applying theories, methodologies and data (interviews, requirements through CoD) collectively, can be seen as valid and generalizable.

Through this study, I have investigated, what makes the RAs powerless that strong desire or force to relapse. It was concluded that the causes of addiction were lack of awareness about ILDs and about craving withdrawals, isolated behaviour from society, lack of check and balance system in educational instruction and furthermore, negligence on the part of government. As interviewee reveals that all interviewees were 15 to 17 years of age when they became addict therefore check and balance on high school and college is very important to restructure society.

I further investigated that the substance RAs after long rehabilitation process use, in order to feel powerful and that leads to becoming an addict again by practicing occasionally because above mentioned causes are still present.

The literature and analysis of qualitative data proves that craving is that powerful disease that can trigger at any time by a cue e.g., mood status, a sign from anyone at any place, familiar surroundings, social gatherings and activities during celebrations. This study findings verified Stalcup, 2007 and Walker & Wood, (2003) findings that, craving, not only have side effect on body, but also change behaviour e.g., anxiety, restlessness, feeling of anger, mood swings, etc., (all interview analysis).

Findings of this study yields that adults start ILDs for sake of fun, and with passage of time to seek same pleasure as their first time users of ILDs drugs start increasing the amount of ILDs and fall into addiction. During addiction timeframe, they only like their addict friends and hate their family social and other serious consequences e.g., boycott and poor grades (Butters, 2005). The data also indicates that the economy factor plays a decisive role in deciding, the drug of choice but sometimes the craving demands stronger substance(s). All the participants were male which also verifies the findings of Samhsa (2014) according to whom most age groups of men are more likely to use most of illicit drugs (non-prescribed/illicit drugs).

The interviewees argued that the detox treatment is necessary to take before starting the recovery process. However, the rehab treatment and reserve activities after rehabilitation cannot stop the craving that capitalizes to break captivity and yearns to be satisfied by the intake of ILDs to cope with swings of moods (Walker & Wood, 2003) and behaviours e.g., anxiety, restlessness, feeling of anger, etc., (Stalcup, 2007).

As DBUNA explained *'after a break, if a RA uses illicit drugs, the first intake will give the addict so much pleasure and in search of the same pleasure, he/she will start using more but will not get that the same pleasure and will relapse that will take him to serious addiction again'*. (Section 7.1.5.1.1: Narrative of Interview 1). As Freeman, et al., (2011) argued, teens and adults in order to alter their mood, get ILDs from their friends and family (Freeman, et al., 2011). However, qualitative data contradict and argues that after rehabilitation and during the recovery timeframe, in order to satisfy their craving participants use their drug of choice that they bought since they are familiar to the places to find.

As Maclean et al., (2002) argued that motivation is the key to recovery and plays the key role in determining outcomes. In the case of motivation interception, lack of encouragement, feeling of self-blame can occur in the case of incomplete recovery that can negatively affect the quality of life even after completing the recovery phases (Maclean, et al., 2002). Interviews data conforms that after rehab treatment they had no motivation to leave their addictions, and they start going to NA just to go out and use their drug of choice, however because of NA encouragement continuously attendance help them to found their inner motivation that is providing them strength to leave additions and courage to fight craving and withdrawal.

The literature review, the result of the qualitative method and the analysis of brainstorming during CoD proves that NA literature, meetings and communication with the other RAs is the most recognised way to stay strong in the recovery (Narcotics Anonymous, 2008). With these methods, RAs learn how to respond to a craving and avoid a relapse. Since the craving can occur at any time, a craving management tool should be available on standby (Ploderer, et al., 2014).

Therefore, solution reach upon digital tool a MG4RA that is embedded to multiple features that were suggested through research methods findings to resist the craving. As mentioned above, these methods contributed to capturing empirical knowledge and goal oriented knowledge of NA members to develop requirements to develop a mobile game for those who often experience ambivalence in their behaviour.

Findings did not stop emerging to one but shaped multiple features as the mobile game users hold diversity in their behaviour, that were aimed to facilitate by providing multiple features. Multiple meeting, Chat, literature, Quiz options alongside Today Story and Assessment were the most dominant features. According to study findings, the conversation with other RAs, NA treasures, sponsors are the source of cleansing of one's inner guilt and the method to gain solutions to divert attention and to have someone who understands the other person's feelings during the craving timeframe.

As Maclean, et al., 2002 argued that recovery professional use techniques e.g., close rapport, day-to-day assessment and chat about their lives in order to enhance motivation. Therefore, the conversation was facilitated by any means by providing multiple meetings and chat options. The presence of NA treasurers is required to ensure that given solutions by the other RAs are valid and will serve as a guide through the NA twelve steps and traditions.

NA Literature is a considered to be an important element to formulate RA personal understanding of a higher power (Narcotics Anonymous, 2008). According to Foltz (2016), literature also enables discussions on a variety of topics to share insights and evaluate ideas further and forces to remember things. Allowing users to play quizzes is a way of cognitive stimulation, leaving positive effects (Claudia & Riemer, 2015) and timely feedback that will enable the recovery battle among RAs. In addition, the assessment and the today story features of the game will also supplement the recovery.

If permission is granted by Alborg university, this study data can help to write paper and publish online because of lack of information online as was mentioned in significance(see Chapter 2: Significance).

Data of this study, could also use for educational purpose, to spread awareness among youth of Pakistan, especially about those elements i.e., craving, withdrawals as all interviewees mentioned that they were unaware of addiction side effects. Furthermore, this study rich amount of data could also use for other research purposes as it is valid and generalizable and results do not conflict with other research paper that were reviewed during literature review. In future, after development fully functional MG4RA, further investigation could also be done, e.g., analysis between different RA who played MG4RA and those RAs who did not play, playtime of MG4RA in gender or different age group.

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12. Appendix

12.1. Consent Forms

In this section, I will provide all consent forms that have been used throughout the thesis process

12.2. Academic Officer Consent

MASTER'S THESIS AGREEMENT

✶ Bjarke Madsbøll

To: Ahsan Javaid

Actions

28 March 2017 15:16

Dear Ahsan Javaid

Your synopsis has now been approved, and you can begin your Master's Thesis entitled:
'Mobile game impact on the behaviour'

Lone Dirckinck-Holmfeld has been appointed to be your supervisor, and you have group number 1

The thesis must be submitted digitally at <https://digitaleksamen.aau.dk/> no later than 23 June 2017 at 12 noon.

You can read more on the various regulations for the Master's Thesis here http://www.fak.hum.aau.dk/digitalAssets/111/111823_kandidatspecialeregler_2015_engelsk_hum_aau.dk.pdf

If you have any questions, you are welcome to contact me by email or telephone.

Venlig hilsen / Best regards



AALBORG UNIVERSITY
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Bjarke Madsbøll

AC-fuldmægtig | Academic Officer

Institut for Kommunikation | Department of Communication and Psychology

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Aalborg University Copenhagen | A.C. Meyers Vænge 15. 3.079 | 2450 Copenhagen SV | Denmark

12.2.1. NA CONSENT FORM

This is an agreement document, which will require signatures of both members

The Narcotics Anonymous is agreed with Mr Ahsan Javaid upon term and condition. Mr Ahsan Javaid has provided written prove that he is currently studying at Aalborg University. He has briefly introduced about his research topic.

Concern person of NA(Lahore) we agreed that any NA members' real identification, will not be disclosed and I will give them a pseudonym name to be include them in his study. If there is any conflict between the terms of my agreement, I will require clarifications as well as a new consent form signature. If the NA finds Mr Ahsan Javaid in any illegal activity, especially if it might compromise organization integrity, he will be reported to the police and will not get any further access to the centre.

Stamp & Signature (institute)



Date 04 / 06 / 2017

Date

04 / 06 / 2017

Signature

Ahsan Javaid

12.2.2. PARTICIPANT SIGNED CONSENT FORM

This document will require signature of the participant

I have agree to take part in the study, which has been explained to me briefly.

- I am (see *table 3*) +18 years of age and after consulting with my parents I am proving this consent. (If participant is not 18 years of age).
- I am 18 years of age or over I am legally able to provide consent.

Mr Ahsan Javaid and I have agreed that my personal identification will be kept secret, he is aware of NA terms and conditions and he is not allowed to record a video during interviews but only audio recording (if possible). He also agreed to give me a pseudonym name. My statements will only appear with pseudonym name. Furthermore, the interview will be conducted in the Urdu and Punjabi language and he is required to get my signature in order to get approval before disclosing in his study. Voluntarily, I am participating in this study and He agreed with me that at any time if I feel uncomfortable or because of any personal but sensible reason, I may withdraw at any point.

Date

04 / 06 / 2017

Signature

Ahsan Javaid


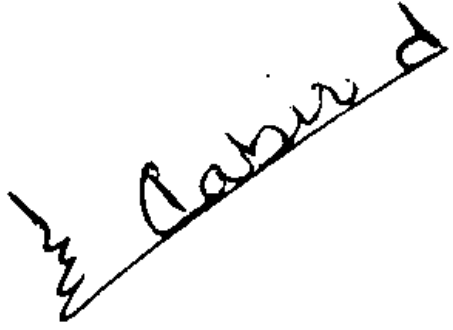

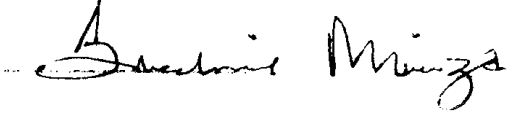
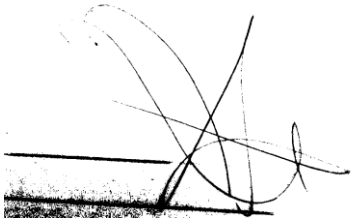
Participants	Their Signature as approval
DBUNA (Interviewee 1)	
AKBRA (Interviewee 2)	
MCNNA (Interviewee 3)	
Co-design participant 1	
Co-design participant 2	

Table 3: Participants signatures

12.3. Interviews

In this section I will provide the complete text of the conversation because the medium of interviews were Urdu and Punjabi. Conversation between me and recovery addicts were audio recorded on the computer while calling through WhatsApp., therefore quality of the sound might not be very clear.

12.3.1. INTERVIEW 1:

The participant of the first interview is a 30 years of age male who became an addict in age of 17. I gave him pseudonym DBUNA.

12.3.1.1. Addiction

- *How would you describe the beginning of the ILD use?*

I was always wondering why people smoke Hashish, sometimes when I was going out somewhere, e.g., school, market to buy something, I smelt hashish in the air (because someone was smoking a joint), I was suspicious, what they feel after smoking, why their eyes and cheeks are red. In addition, I heard many phrases e.g., after hashish if you drink milk, eat meat, it will affect you double on your body and you will be double strong (Clip 1, 01:40).

I never smoked before and first time, a professional joint smoker, who regularly smoked Hashish, therefore, was smoking strong joints, made the joint I smoked. I still remember that after smoking hashish when I came to bed, I was praying to God please save me this time, I will never do that again. Praying, I cannot take this anymore either finish me or finish this feeling. I cannot describe, my bed was rotating clockwise and I had so many terrible thoughts, not to mention how many times I ran to vomit.

- *Did you think that you were only doing it for the sake of fun and would not use it regularly?*

Indeed, I think every person thinks like that, and I also told myself that I was doing it just this time, just for the sake of fun, even thought my first experience was the worst (Clip 1, 02:06). However, when this worst feeling became less intense, I started having real fun that I was flying, in the state of hallucination, I could hear anything and I was so happy after a while. That was the feeling; I tried once more.

- *How many ILDs did you use and which one became your ILD of choice?*

On early timeframe, when I was not doing anything, I heard so much about different types of ILDs and was always curious what happened after using. I watched movies, heard stories from friends, which gave me the reason to try a little bit, but not so much, unfortunately, trying did not end up as I was thinking (Clip 1, 06: 26). I started from Hashish and Bhang (edible preparation of cannabis), marijuana and sometimes drank alcohol (Clip 1, 28: 01).

- *How long had you been using the ILD(s)?*

Around 2 years, but I did not try so many ILDs, mainly, I used Hashish and marijuana, Bhang (edible preparation of cannabis), or sometimes drank alcohol (Clip 1, 11: 28).

- *When you were using the ILD(s), were you aware of the possible dangers to your life?*

No, from the beginning, I never thought so until I was sent to the rehabilitation hospital. This is enough danger because of my mistakes I am broke, and still working hard to retrieve the damage I did to me and to my family (Clip, 05:18). However, by God's grace, still, I feel blessed that I was not in the worst condition as other addicts I saw or know.

- *Do you blame your immaturity for this?*

Yes. (Clip 1, 04:57)

- *What motivated/pressured you?*

Nothing motivated or pressurised me, it was my own decision. It was my own curiosity; I think if someone puts the blame on someone or gives you a lame excuse, in my opinion, he is lying.

- *What thing/phenomena forced you to use the ILD(s)?*

When someone starts using, the things that I mentioned earlier, these things become your needs as food (Clip 1, 12:53).

- *What was your normal routine?*

Being an addict, I was thinking of smoking hashish all the time. First, there was no routine, I could not sleep, I wanted to sleep but my mind was awake and to make myself sleepy, I smoked another joint, and later after 3 to 4 more cigarettes, I was exhausted from trying.

- *How were you getting your ILD(s)?*

At the beginning, I used personal relations to arrange, later I got a direct contact no of the dealer. I used to call him and he delivered it himself by keeping his 20% (20% less hashish if you go and buy yourself) but if sometimes he was not within range(not picking mobile, mobile was off) I went myself to him to another area. However, when I brought myself, I was afraid of police thinking what if they catch me (Clip 1, 15:53) therefore, in the beginning, I avoided going to the spots. But later, I started going myself and I found no difficulty, as compare to first year after 12 years there were so may spots, now I think the situation is worse, everything is available everywhere (Clip 1, 16:33) because these things have become a fashion, demanding trend.

- *How were you hiding the ILD(s)?*

At the beginning, I was so afraid of hiding hashish, I was hiding in the every stupid place thinking that nobody would realise for instance: inside my pillow, in my shoes, in my mobile, but later I started hiding it in the locker (Clip 1, 20:53).

▪ ***How hard was it for you to get your choice of drug(s) and fulfil yourself?***

Mostly I had a full pack of joints (Clip 1, 14:03), It was the worst, for instance, if sometimes it was heavy rain, but I had to go to buy, or had no money, because I already used all my pocket money which I was getting from family for my personal use (e.g., food in canteen, new clothes, travelling etc.) (Clip 1, 06:37).

• ***How did you acknowledge that from an occasional user, you became an addict?***

When I realised that I stopped smoking plain cigarettes but only smoked joints (Clip 1, 14:11). Furthermore, I also realised that my whole routine was completely messed up, I did not sleep with punctuality, had unorganised plans, did not remember which day or date it was (Clip 1, 21:32). When I got up, the main reason for making some efforts was to go and buy hashish, the later process of making joints and smoking joints (Clip 1, 21:54).

• ***What challenges did you face in your addicted timeframe to fulfil your needs?***

At the beginning, the biggest challenge was to arrange a place where I could sit and without any interruption smoke joint(s) (Clip 1, 17:39). If I had a place, then I feared what someone would come like my elder brother or father, and after smoking and after hallucinogen tension was over; what story I should create because I was late to coming back to home (Clip 1, 17:39). Arranging money, dodging my mother about money calculation because I wanted to buy Hashish. Being an addict, all the time, I found myself in the state of torment. However, still, I really praise God that I was not stealing money. In fact, no one ever complained that I ever stole anything to generate money to buy hashish (Clip 1, 18:39). Moreover, I did not create any drama that someone beat me and took all money which family gave me for paying the bills etc. I was getting enough money and for that money, I was only buying hashish and a pack of cigarettes even a lighter because I did not want to ask anyone. Whenever I needed, I wanted to have my own things ready and in range, so I was well prepared (Clip 1, 19:19). In addition, I did not like to share or invite anyone over because if I invited someone, then I would have to offer him a part and if I smoked with him that and the following day, he would come to me, so I was arranging everything for myself and smoking separately. Yes, very early, I was inviting on special occasions like Christmas time, New Years' time, Eid (Muslim celebrations) (Clip 1, 19:40).

○ ***Can you put your feeling/desire into words when you crave for the ILD?***

I could describe the desire of ILD was like feeling thirsty, I really want to drink water, and I will not feel good until I drink water (Clip 1, 13:30). Craving has demands that ask for calmness on its time but only a few people can control this and set a schedule. In the beginning, I was also taking drugs according to my self-made schedule, but later stage changed where craving start demanding right now (Clip 1, 13:35).

- ***What symptoms and surprising behaviours did you have/develop?***

That I was only busy with only one personal activity (Clip 1, 21:40). Life without any proper routine, sleeping and getting up without any proper schedule, I did not remember which day or date it was (Clip 1, 22:27). I was losing self-respect, I was not afraid what someone who saw me would say about me, I just accepted that everyone knew that I was an addict and I did not care about these people and their thinking about me (Clip 1, 23:13). Moreover, even though someone was saying something good to me, I was getting angry, feeling like fighting with this person. If anyone was talking to me, I felt extremely irascible (Clip 1, 23: 32). I also acknowledge the swing of moods; right now, I am happy maybe after two minutes angry or fighting with someone (Clip 1, 30: 02). Furthermore, all of a sudden I will start laughing (Clip 1, 30: 12), or by thinking something, I will draw a conclusion without consulting anyone, and will become sad or start thinking too much about a situation and draw opposite or very strange conclusions (Clip 1, 30: 27).

There was no alternate, I could not eat before smoking. Many times, when I could not fall asleep (an addict's brain in my opinion never sleeps), I would take one more cigarette to feel sleepy, but in a while it would start running with double speed, still could not sleep, I cannot explain this moment in words that I want to sleep but cannot sleep. Sometimes the brain was just running nonstop no matter how I tried to bring peace and this torment is very hard to explain (Clip 1, 31: 21). A series of thoughts falling like heavy rain drops, and hide and seek with drug and sleep continuing for a few hours and meanwhile, I took four joints but nothing was helping and could not fall asleep even if I was just lying down on the bed for six hours (Clip 1, 32: 10).

My life pattern changed completely, I started feeling that I was extremely brave, no one could compete with me and I was one of my kind, nothing was impossible for me (Clip 1, 32:20). Especially when I was high, I was making huge plans, sometimes for three to four hours, I was just making plans. When I became an addict, I started speaking very big words, sketching huge castles on clouds but did not want to do anything to achieve that (Clip 1, 32:20). The only action with thriller I could remember was that my hashish was over and I was going to buy hashish on any condition and after getting, making joints and smoking (Clip 1, 33:19).

- ***What were the alternates you adopted when your choice of ILD was not accessible?***

If hashish was not within reach for whatever reason (e.g., strictness of law), then I use alcohol, which is very easy to find in the neighbourhood (Clip 1, 26:35). I hardly ever switched hashish for anything else; I think there were hardly 10 times in 4 years when I used alcohol or anything else as a substitute (Clip 1, 27:32). Indeed, hashish and alcohol pleasure is different, however, for the sake of killing the time, I would use alcohol, but I was getting the real pleasure only by making my choice of ILD (hashish) (Clip 1, 28:25). Because I just wanted to feel drowsy, in order to gain swinging feeling I will switch if my choice of ILD was not available (Clip 1, 28:45).

- ***Did your close family members (parents and siblings (if any) know about your addiction and what their reaction was?***

At the beginning, really, I was upset to face my family, e.g., what my parents would think or say about me if they smelt hashish; they would check my pockets, ask me 100 questions and scan me from head to toe. (Clip 1, 06:47). However, I kept my things in my personal locker (Clip 1, 19:47). They came to know after a long time, how they came to know is still a mystery for me (Clip 1, 33:40). However, when my family came to know, they knew my routine, that when I was going to buy, the room was locked, for sure making joints later, if I was going upstairs to smoke, they knew everything and I was not hiding anything from anyone (Clip 1, 34:12).

- ***How did they come to know that you were an addict?***

I think they came to know because of Hashish or cannabis smell that I smoked, but they did not know how far I had been through (Clip 1, 38:10). In my opinion, to be more precise, they came to know it because of my unstructured routine, my suspicious behaviour, I could not sleep at night, was losing interest in work and study, spending so much, stopped returning a receipt (Clip 1, 34:12). Very peevish behaviour, all I wanted to do was to fight; I think choices of friends also indicated (Clip 1, 34:37).

- ***Did your other relative (close/distant) know that you were an addict?***

I think only one relative (cousin) came to know that I smoked hashish. However, when I became a regular smoker, I was busier with activities, so I stop visiting my other relatives (Clip 1, 35:05). Relatives were always asking the question where I was, what I was doing, why he did not come for so long and were asking suspicious questions. In addition, my parents and siblings only replied they would call him and said that when they asked him to come, he said he was busy doing something (Clip 1, 35:57). Since my family (parents, siblings) know that I am an addict and they indeed will never highlight my posters anywhere they go (e.g., other relatives)(Clip 1, 36:07) 7 (Clip 1, 36:12).

- ***What was their attitude and how did that affect your life?***

In the beginning, they were extremely strict, all the time someone was spying on me until they realised my pain and that I was unconscious and did not know what I was doing. Parents stopped to give me money and were not allowing me to leave home; sometimes they also threatened to kick me out of the house (Clip 1, 37: 09). However, it was only as a threat (Clip 1, 37: 40). They simply told me that if this is the life you want for yourself then pick your basic daily necessity things and leave this place and go to whom you think will support you (like friends who are also smokers) (Clip 1, 37: 58). Later, they were only demanding to get a treatment in order to come back to normal life. (Clip 1, 37: 25).

- ***Did the community (neighbour(s), workplace, school) you were around, know that you were an addict and what was their reaction?***

Sadly, everyone knows (Clip 2, 01: 25).

○ ***What was the community (neighbour(s), workplace, school) attitude towards you?***

Those who believe that addiction is bad even stopped talking to me in a normal way (Clip 2, 01: 35). There were so many in my neighbourhood who were looking at me with misery, or some were looking at me as if I was some kind of an animal (Clip 2, 01: 52). Now I cannot remember, to be precise which one was different with me, because an addict only lives in his world and seems unconscious for others (Clip 2, 02: 02).

▪ ***What was their attitude and how did this affect your life?***

During addiction, I had no idea, but when I was recovering, I started realising different people and their different attitude and who was not nice to me at all (Clip 2, 02: 09). However, these people mean nothing to me, if someone is like me, fine, but if someone does not like me; I really do not care, those who left, means nothing to me (Clip 2, 02: 23).

• ***Did your friends know that you were an addict?***

Yes, everyone knew that I am an addict, non-smokers, smokers both. Some non-smokers stopped meeting me like before, a few stopped connection with me but I made other new friends. Most of them were smokers and were smoking joints with me (Clip 2, 03: 16). I was an addict, of course, I would make addicts as my friends. (Clip 2, 04: 09).

○ ***What was their reaction towards you and your habits?***

When I was addicted, some people thought I had fallen down into the gutter and they did not want to make their hands dirty by being seen around me. It's all about acceptance, I think I accepted that I was a mess and people's behaviour would be like that towards me (Clip 2, 03: 09).

▪ ***What was their attitude and how did this affect your life?***

No, they did not affect my life, those who want to have a connection with me, are still my friends (Clip 2, 04: 08).

○ ***Did some of your friends join later?***

No, no one from my friendship circle (Clip 2, 04: 53), when I became an addict, some did not smoke and they remained non-smokers, but a few (non-smokers) took looked away, therefore, I made a few more addict friends (Clip 2, 05: 12).

○ ***Did some of your friends break up their friendship because of your bad habits?***

Yes, a few left. I do not think I can even call them my friends (Clip 2, 05: 15).

- *Did they try to inform some of your family members that you were on the wrong path?*

I do not know, maybe someone denounced but, not to my knowledge (Clip 2, 05: 43). I do not think I found a true friend who will guide me when I am doing something wrong (Clip 2, 06: 12).

- *When did you realise that you were doing it wrong and you needed help?*

Until the end, I did not realise that I was doing something wrong. Until I was forced (by the family) to be admitted to the rehabilitation hospital (Clip 2, 06: 39). Before that, I was thinking of quitting so many times, that later in future on this celebration I would do it last time, like never before and would never do it again, but that was just a big lie which I was telling myself (Clip 2, 07: 39).

- *Would you like to add/share something more, which you forgot to mention or think I should also know that?*

My family wants to take me to hospital for a treatment but I know that if I go there, they will admit me, and I was telling them all the time that I would go with them but not that day, I had so many plans then.

Today, I feel proud of myself that I am not using anything now and this achievement is big enough for me (Clip 1, 05: 36), people who smoked with me, some of them have already died, and some of them are in a worse condition. However, for me, this achievement is big enough, that today after doing so much crazy things, I cannot even think of using anything (Clip 1, 05: 19). Furthermore, I also know if I start again, then this thing (hashish) will throw me even harder than I was before. (Clip 1, 07:22). Anybody can fall into ILDs anytime, therefore always remember who you were, from where you started and where you are today (Clip 1, 10: 02).

12.3.1.2. Rehabilitation and Recovery (NA)

- *What did you/your family do after realising your addiction to start a normal life again?*

My father told me that we were just going to talk with a doctor and we were only going to talk with him, nothing especial. Later, he took me to the army hospital, where my father had already had an agreement with doctors. When our appointment time came, the doctor saw me and rang the bell, and later two men in army uniforms lifted me and took me to one room by holding me from both corners, that movement, I said to myself: that's it, I cannot do anything anymore, it's all over (Clip 2, 12: 46).

- *Had you been to a rehabilitation centre or hospitalised?*

3 days before Eid (Muslim celebration), I had a fight with someone on the street and because of that fight my family took me to hospital earlier than I expected, because I knew I would be hospitalised for a long time (Clip 2, 11: 10). After the detox treatment, when I came back to the room, my locker was empty and my father told me that they had flushed everything down the toilet because they were afraid that I would start again (Clip 2, 15: 10).

- ***How was the treatment?***

Yes! I took a detox treatment and I was hospitalised for around a month. At the beginning of rehabilitation, they were giving me very light joints to smoke, and different types of pills but later they completely locked me up (Clip 3, 06: 57). When I completed my prescribed course of drugs, my doctor signed a paper where it was written that his team could visit me at any time to inspect on any occasion and they would take me back to hospital if they found anything suspicious in my dope test and would lock me up again for a worse and double timeframe (Clip 3, 07, 54).

- ***On the rehabilitation timeframe, how did you handle your surprising behaviours?***

I was very angry but could not do anything and was not allowed to go anywhere to find anything (Clip 3, 07: 15).

- ***How often did you use the ILD during rehabilitation timeframe?***

Only at the beginning of the treatment, I was granted little Hashish (Clip 3, 06: 57). However, when I gained my trust, I started going to hospital for the follow-up meetings alongside the NA meetings, where many times I felt powerless (Clip 3, 07: 15). Therefore, I was secretly smoking a little bit of joint because my unlimited choice of ILD was hashish (Clip 3, 24: 22).

That time I was not clear about quitting addiction for my lifetime, in those moments I thought I could make my routine, control myself, and only smoke a little bit (Clip 3, 23: 15).

Because my heart and mind were unable to accept that for rest of my life, I would not be able to use hardcore ILDs.

- ***What difficulties did you face during the treatment?***

Because of the letter I signed at hospital, I was scared to use Hashish for more than 6 months, but when I realised no one came to visit me, I started using a little bit alongside joining the follow-up meetings (Clip 3, 08: 23).

- ***How did you start your recovery?***

After rehabilitation, I was still going to the same hospital for the follow-up meetings with the presence of the head of the program, psychiatrist(s) and doctor(s). After a while, when I was not new to follow-ups meetings, they started giving us books, later presented the role model for inspiration, all members of small groups, so it really helped me (Clip 3, 06: 46).

- ***Who introduced you to NA recovery program?***

I did not visit NA because of my own wish, no one visits NA at his/her own request, people are mostly uncertain about the process that they will visit and will be cured (Clip 3, 00: 28). While I was in follow-up meetings, NA members visited us to guide us that leaving addiction is simply not the last thing and

explained the possible option to come back to life (Clip 3, 01: 43). In addition, this is one of the steps in their 12 key steps program that conveys the message of healthy life to other addicts, as I also introduce to other addicts when visiting NA meetings (Clip 3, 02: 22).

- *What is the difference between NA and other treatments/therapies?*

The rehabilitation hospital had attendance system (call names and mark those who are present), where doctors present other patients as a role model that supports a little bit (Clip 3, 09: 48). On the other hand, the NA program, NA meeting, NA fellowship, unconditional love, works a miracle, which only requires regularity and punctuality (Clip 3, 00: 43). On NA meetings, people are open to discussing their problems, I will forget about my problems because there are so many like me, their lifestyle, their problems, which sounds so much similar to mine (Clip 3, 10: 27). On a setup meeting, all those people who come admit that they have a problem and they are addicts in front of everybody (Clip 3, 11: 14). Admitting that we are addicts reminds us that we all have the disease (Clip 3, 12: 40). After admitting, we all read literature, and then we discuss our problems, which gives me answers to many of my questions, without even asking questions (Clip 3, 14: 48). At the end of the meeting, we exchange hugs, the number does not matter, but we have to hug all of them and then discuss further, wherever a person would like to sit. Finally, in the end, we celebrate the anniversary of someone who completed one, two, three, thirty etc., years (Clip 3, 15: 34). In addition, today I think if I had not been introduced to the NA program, I could have suffered a relapse (Clip 3, 17: 45).

- *What were you seeking by joining the NA support group meeting?*

At the NA meetings, there are all types of people, honest or unfaithful, both, but I made friends with both on a different timeframe of recovery (Clip 3, 04: 53). Moreover, when I came to know about the system of NA, I realized it was really working e.g., by looking at role models, especially when I found a person whose vibes matched mine in that context we both met, and started meeting and followed the guidance of another senior person (e.g., Sponsor)(Clip 3, 05: 14).

- *Do you think NA is the place you were searching for to get out of addiction?*

In my opinion, if anyone has any burning desire (goal to recover), only this way you can get out of addiction, if you lack that burning desire e.g., are not honest with yourself, not sure whether or not you want to quit or not, if someone thinks that sometimes it is ok to have a little bit for the sake of fun (Clip 3, 01: 14). During the first visit, I had no hope, I was uncertain and thinking all the time that I might become an addict, however after going there for a few setup meetings, I started getting the guideline, really desired to leave addiction, and started noticing the brighter signs (Clip 3, 16: 39). Especially NA say: attend the meeting, it does not matter if you still use drugs or not, but come regularly, only do not use any ILDs while sitting in a setup meeting, meet fellowship (Clip 3, 03: 25). Because members of NA are confident that other people will influence you one day (Clip 3, 03: 52). Many people visit NA meetings, I noticed they still use ILDs, behaving irrationally on their way back still using ILDs, but still come to the meeting (Clip 3, 03: 25).

- ***On early days of recovery timeframe, how did you handle your surprising behaviours?***

When I started getting the light, if any thoughts were coming to my mind, I was simply rejecting that this was a false thought and I could not become a fool because of this thought (Clip 3, 20: 52). Sometimes when I had a feeling of failing, I used to call my friend from NA only if I had a balance in mobile otherwise I would visit or invite him over to talk (Clip 3, 21: 01). If both were not possible, I took a shower sometimes even multiple times (Clip 3, 21: 18). Moreover, if it still did not work, I would go out for a walk, I did these kinds of things to divert my attention, but I did not use anything (Clip 3, 21: 18).

- ***How often did you use the ILD during recovery timeframe?***

On early days of my recovery, I was pretending that I was going to the NA meeting, because I was completely locked up at home and on my way back, on my way back home, I used to arrange Hashish for the whole week and used it at every opportunity (Clip 3, 04: 46).

Later, I was only smoking normal cigarettes and chewing a Paan (betel leaf combined with tobacco etc.) or Gutka (areca nut, combining tobaccos and catechu). There was a time when I was at home and it rained for last 3 days and I really wanted to eat Paan, I took my bike and went 30 minutes far to have a Paan (betel leaf)(Clip 1, 25:05). The moment I went there and I ordered Paan and started chewing, while I was coming back home, I realised that I did not care about so much heavy rain and I came this far. Furthermore, even eating after a long time I was feeling bad, the only difference was before I was a hashish addict and that day I was becoming a Gutka addict (Clip 1, 25:30). Before arriving at home, I spat that on my way and promised myself not to use it anymore and my next target was to leave cigarettes (Clip 1, 25:48).

- ***How often did you fail to control your behaviours?***

On the early meeting, when I started going to the meeting, after the meeting, I went to the spot where I could find hashish and used that little amount of hashish for the rest of my week until the next meeting.

- ***When failing to control your craving, what was your choice of ILD?***

Hashish was my choice of ILD (Clip 1, 24:33).

- ***What was your motivation to join NA's setup meeting?***

After the treatment, I came to the set-up meeting, where I met other people, discussed problems I was facing and read literature there. Any member of NA meetings can borrow their literature and can read but only there and in my opinion, a recovering or recovered person should always read the literature. As NA claims, literature explains that if after recovery or during recovery someone takes the ILD, it will give someone pleasure which cannot be forgotten (Clip 1, 06:53). In addition, in search for the same pleasure, that person will never get that pleasure, he/she will become addicted, and this time he/she will use drugs out of control and cannot pay the price the pain for the situation he/she will end up in (Clip 1, 08:10).

Moreover, getting out of that situation (recovery) will be even harder than for someone who is recovering for the first time.

- ***What are some of the things, which motivate/force you to go to NA?***

NA meetings, NA friendship, unconditional love from others (Clip 3, 00: 43). NA program where people are open to discussing their problems, I will forget about my problems, because there are so many like me, their lifestyle, their problems, which sounds so much similar to mine (Clip 3, 10: 27). Furthermore, I get answers to some questions, which occur in my mind without even asking them because many times other people have similar problems like those that I am going through (Clip 3, 11: 42).

- ***Does it sometimes occur to you that you do not feel like going to NA anymore?***

No, I feel peace and security by going to NA meetings because there is unconditional love because there are friends who are just like me (Clip 3, 10: 17).

- ***After such swing of behaviour, how do you keep your focus on attending the NA setup meeting?***

NA says: attend the meeting, it does not matter if you still use drugs or not but come regularly, only do not use any ILDs while sitting in a setup meeting, meet fellowship (Clip 3, 03: 25). Because members of NA are confident that other people will influence you one day (Clip 3, 03: 52).

- ***How did you control yourself not to use anything to satisfy your need during craving timeframe?***

I do not crave for ILDs anymore, craving is a different thing and thought of using the ILD is a very different thing (Clip 3, 18:48). Thoughts still come to my mind, if I have such thoughts, I remind myself that I am an addict and if I start again, I will end up in the most disgusting situation (Clip 3, 19:00). Because of NA literature, I am aware of that and I also fear that if I take one dose of ILDs, it will give me satisfaction beyond my expectations but later I will misuse ILD in search for the same feeling (Clip 3, 19:12). I will change my mind by doing various things. Sometimes I have dreams that I am using ILDs again and when I wake up, I am all in a sweat and feel heavy breath with the guilt of shame for what I have done (Clip 3, 19:24).

- ***What does NA offer you to start taking recovery process seriously?***

NA is a platform where I receive unconditional love, providing an opportunity to share/discuss problems (Clip 3, 14: 27). Apart from other benefits which I mentioned before (e.g., NA meeting, fellowship, unconditional love, anniversary celebrations) NA also provides a sponsor and it is necessary to follow him but unfortunately, because of my busy life work schedule, I was unable to follow him (Clip 3, 25: 07). A sponsor is a high power, with whom you must stay connected, who guides you showing what to

do, about the lifestyle, readings, as if you can ask him the question that if at any stage if someone feels like using ILDs, he will give you tips to follow (Clip 3, 25: 44).

- ***What benefits did you gain after visiting recovery program?***

For instance, if something is bothering me, during the meeting, second or third etc., someone will discuss a similar situation, I do not even ask my own question, and I get answers to my questions without even asking (Clip 3, 14: 42).

- ***What keeps you motivated to complete the recovery process?***

If someone has any burning desire (goal to recover), it is the only way to get out of addiction. Furthermore, someone lacks that burning desire if someone is not honest with himself, not sure about quitting addiction (Clip 3, 01: 14).

- ***What are your plans for future after recovery?***

Now I am working fine in Islamabad, people trust me and respect me.

- ***Would you like to continue visiting NA after your recovery?***

Once someone is an addict, it is important this person visits NA continuously.

- ***Would you like to help other addicts to break this bad habit after your recovery?***

According to NA principles, I cannot be a sponsor until I have any sponsor (Clip 3, 28: 23) because I was unable to follow his roles. Yes, a few people are going to NA meetings because I took them with me at the beginning and found a sponsor for them who will guide them properly (Clip 3, 29: 22).

- ***What are the most common activities you are involved in during the recovery timeframe?***

First of all, we gather and sit around together, after 2 minutes of silence, we take our names and I am person X and I am an addict (Clip 3, 11: 14) everyone speaks out loud that he is addict admitting that this is a disease (Clip 3, 12: 40). After admitting, we all read literature then we discuss our problems, which gives me answers to many questions, even without asking questions (Clip 3, 14: 48). At the end of the meeting, we exchange hugs, the number does not matter, but have to hug all of them and then discuss further wherever a person would like to sit. Finally, in the end, we celebrate the anniversary of someone who completed one, two, three etc., years (Clip 3, 15: 34).

- ***Do you feel some change in your social life after going to the recovery program?***

Today I feel sense and responsibility; people respect me, I found many other friends mostly from NA. Furthermore, opinions' patterns have changed completely (Clip 3, 31: 29).

- *Do you feel that after completing your recovery you might start using ILDs again?*

Today I have an honourable status, people know me, they treat me with respect and can guarantee that they did not see me using the ILD even when going sightseeing together (e.g., mountain area). Because they saw that although I was with other addicts on different occasions, I did not use any ILDs (Clip 3, 30: 22).

- *Would you like to add/share something more, which you forgot to mention or think I should also know that?*

In order to leave any ILDs, the detox treatment (available on a different timeframe) is necessary (Clip 3, 16: 59). After 90 meetings of the recovery program, my personal experience is that I saw people start living their life free of drugs (Clip 3, 17: 45). Moreover, NA is that platform where regardless of religion, cast, being rich or poor, all members sit together, anyone can visit NA meetings and can discuss their problems (Clip 3, 33: 45). Moreover, NA's tradition is that whatever someone says during the NA meeting stays in NA meeting room, no one is allowed to denounce anyone (Clip 3, 34: 02).

12.3.1.3. Video game

- *Are you fond of video games?*

No, I do not play any game on mobile, however when I was young (school going boy) that time I used to play many games now I have lost my interest in playing video games (Clip 3, 34: 49).

(If the answer is no)

- *Why don't you like to play a video game?*

I do not have an interest in video games now, when I get bored, I watch a video including adult films, chat on mobile but nothing else (Clip 3, 35: 16).

- *Would you like to play a game on your smartphone?*

I am happy without playing games because of my other entertainment choices. However, if the real NA introduces the game where they will have an online system that can follow NA principles and can supplement our recovery, I would like to use that mobile game (Clip 3, 36: 16).

- *Would you like a game to provide you support for your recovery?*

If that game can keep our anonymity, I do not see the reason for rejecting that game (Clip 3, 36: 26).

- *Would you like the idea of playing the game with other people who are also recovering the same as you?*

If they are only recovering like me, I would like to play with them (Clip 3, 37: 16).

- *Would you like to play the game with addicts?*

I would like to play only with people who are stronger in their recovering timeframe.

- *Would you like to play the game with those who are recovering?*

Yes, recovering and other members of NA.

- *Would you like to learn about recovery by playing the game?*

If NA introduces this game to us, I cannot see the reason for rejecting it (Clip 3, 38: 05).

- *Would you like to learn about healthy activities by playing the game?*

Yes, because I am in a driving business and I have very fewer activities.

- *What kinds of elements could you think of a mobile game should have for those who are recovering?*

If I can read literature, solve different tasks with other members (Clip 4, 01: 16).

- *Would you like to help someone to develop the concept of the game?*

Yes, but it might be problematic for me because of work I am living in a different city (Clip 4, 01: 36). However, let me know when you arrive in Lahore, I will try my best to meet you there.

- *Would you like to take part in further research in coming future?*

If you have any further questions, just write to me on my number, I will reply as soon as possible. Moreover, I would like to take you to the NA setup meeting (Clip 4, 01: 40).

12.3.2. INTERVIEW 2

The participant of the second interview is a male who became an addict in age of 17. I gave him pseudonym AKBRA.

12.3.2.1. Addiction

- *How would you describe the beginning of the ILD use?*

When I was school going boy, I was not allowed to leave home without permission, I had very few friends, in the higher school, I was a very sharp student and mostly I was around my books (Clip 1, 00:39). Furthermore, I did not invite anybody (e.g., boys playing together on the street), I think I had a very big block (e.g., ego) therefore; mostly I was alone (Clip 1, 00:48). Furthermore, when I was a little relaxed or free from my studies, for a while I used to go out to play snooker (Clip 1, 07:38). Moreover, I was not into any physical game, e.g., running, swimming, cricket because I had a very conservative personality on that timeframe of my life (Clip 1, 07:42).

When I passed my higher school exams with good marks, I went to college, from the beginning, there were a few boys who approached me on a daily basis, but I ignored them (Clip 1, 01:02).

However, from the beginning addicts, personality attracted me, because of heaviness in their voice, stagger, I always used to think that these people have no problems, they only use a little amount of ILDs and later they are tension-free (Clip 1, 01: 20). Furthermore, they live a very relaxed life, they will just go home and sleep without any botheration (Clip 1, 03:42). Because in the society or area where I live, regardless of people's age, one way or another people mostly use ILDs and there are very few people who do not use anything (Clip 1, 03:12).

However, I was unable to see their negative side (Clip 1, 01: 27). After a while, I finally decided to use and that day I felt, I became complete, I finally found the thing I was lacking inside me (Clip 1, 01: 48).

- *Did you think that you were only doing it for the sake of fun and would not use it regularly?*

No, back then I never thought that I would become an addict, I always thought I would only use it on celebrations e.g., wedding celebration, Eid festivals (Clip 1, 02: 38). Unfortunately, it did not happen to me (Clip 1, 01: 41).

- *How many ILDs did you use and which one became your ILD of choice?*

When I was around 15 and a half or 16 years of age, the first ILD I tried was Hashish (Clip 1, 05: 13). Even though I never touched a cigarette, I learn how to smoke a cigarette to smoke joints (Clip 1, 05: 56). After a while, I also used another type of things with joints like sleeping pills, alcohol and eventually I ended up using opiate(most commonly used word in society 'heroin' (brown heroine)) (Clip 1, 05: 23).

- *How long had you been using the ILD(s)?*

Around two years I used these ILDs, alcohol, and sleeping pills (Clip 1, 05: 34).

- *When you were using the ILD(s), were you aware of the possible dangers to your life?*

Yes, I was aware of the danger of ILD use (Clip 1, 08: 21). When I tried a few times, that time I tried to quit the use of these ILDs, but I was wrong and this struggle continued for two years (Clip 1, 08: 30). Furthermore, at the beginning of the use, I did not realise ILDs' craving (Clip 1, 08: 38). I always

thought that I would leave it and never use it but later I realised that I had become an addict (Clip 1, 08: 49).

▪ ***Do you blame your immaturity for this?***

No, I will not put the blame like that, I was always thinking that I know everything and I think because of my isolation, I eventually became an addict (Clip 1, 09: 24). As my personality had a gap, which I tried to fill up through addiction (Clip 1, 09: 39), I started using the ILD to enter my fantasy world where I did not need anybody else (Clip 1, 09: 51).

○ ***What motivated/pressured you?***

Addicts' personality attracted me, e.g., heaviness in their voice, stagger, I always used to think that these people have no problems, they only use a little amount of ILDs and later they are tension free (Clip 1, 01: 20). Furthermore, they live a very relaxed life and they will just go home and sleep without any botheration (Clip 1, 03:42).

• ***What thing/phenomena forced you to use the ILD(s)?***

Previously, I used the ILD to enter my fantasy world; however, with the passage of time, I eventually started using it for sex purpose regardless of my other personality issues (Clip 1, 10:52). It is true that in the beginning, I was using it, so I did not need anybody but if you can have more pleasure only by spending 500 PKR (around 35 DKK) on ILDs what else could I wish for (Clip 1, 11: 28). When I used to smoke hashish, I did not desire to have sex but when I started using opiate, I needed sex (Clip 1, 11: 59). Maybe this is one of the good reasons I like opiate more than any other thing (Clip 1, 12: 23). In addition, around 1 to 2 hours before going to my girlfriend, I overdose of opiate (Clip 1, 13: 09) but not exceeding my limit because I had to go to visit my girlfriend. (Clip 1, 13: 27). In addition that time, I used to hate my family because they were stopping me from going outside for a longer time and I liked my friends more because they were encouraging me to take opiate (Clip 1, 14: 22). Since I started enjoying friends' company, I started using more opiate (Clip 1, 14: 34).

○ ***How were you getting your ILD(s)?***

At the beginning, I found it from college friends within the campus area and smoked there. Since I was good at studying and I had a goal to finish my studies, I left my college because I realised premises of this collage and collage friends were not good (Clip 1, 15: 10). After quitting college, mostly I was studying privately and at home, however, since I had used it a few times, I started craving and started smoking with other friends who I knew smoked hashish (Clip 1, 15: 28). Sometimes I told my friend to buy hashish for me, then I met a college friend then I smoked with him, this friend had many contacts that I got from him and later started arranging it myself (Clip 1, 15: 49). When I started arranging it by myself, I used to smoke all alone and no one knew that I had anything hidden in my body (Clip 1, 16: 00). However, when I started smoking opiate, it was a little hard to arrange (Clip 1, 16: 30).

Honestly, I did not feel an addiction to hashish, I did not feel anything if I did not smoke hashish for one or two days (Clip 1, 16: 45). However, when I used opiate, one thing I noticed was that whenever the

opiate effect was over, I had a headache, suffered vomiting, sweating and pain in the body, irritation, cramps (Clip 1, 16: 56). Since I was a student that time, I did not have so much money. I started stealing money from home, lying and cheating other people because my main goal was to make money and buy opiate (Clip 1, 17: 17).

- ***How were you hiding the ILD(s)?***

Whenever I was buying my ILDs, I was hiding it in my underwear, before going home, I was hiding it under some stone where no one would touch it or sometimes took it home secretly (Clip 1, 18: 08). Sometimes I handed it over to my friend as well, mostly hiding close to my home under some big stone in the corner where people, especially kids, normally do not go. In addition, it never happened during my entire addiction timeframe that I lost my ILD (Clip 1, 19: 06).

- ***What was your normal routine?***

After getting up in the morning, without making breakfast, I used to going out and use my ILD. After using an ILD, I would come back home and make breakfast and right after finishing I would go out to use my ILD once more (Clip 1, 19: 32). Without smoking hashish, I was not feeling hungry (Clip 2, 01: 27), I could eat something but I was not feeling hungry for food (Clip 2, 01: 43). After using the second time, I would come back to the room, take some rest for one or two hours and the moment I could feel that the effect of hashish was diminishing before finishing its pleasure, I used to go out once more and use it one more time (Clip 1, 19: 51). This was my normal routine for the rest of my day when I was not enrolled in any college (Clip 1, 19: 56). However, when I enrolled myself at other college or joined extra private lectures, before classes/lectures, I used to smoke hashish (Clip 1, 20: 19). I spent all day preoccupied with addiction and drowsiness (Clip 2, 01: 15). Since I was an addict, I had no problem making cigarettes for myself, I was mostly prepared in advance, whenever I ran out of cigarettes, I would find a little time, in this case, and make cigarettes in toilets (Clip 2, 02: 43).

- ***How hard was it for you to get your choice of drug(s) and fulfil yourself?***

When using ILDs, I faced no problem, even once I went to a mountain area with my father for three to four days, that time he used to be with me 24/7 but I took my ILDs regularly without any problem (Clip 2, 04: 27). I told my father that I was going to the toilet and taking heroin there was not such a big issue because I was sniffing it very fast, but not with smoking because to smoke it took me around 15 to 20 minutes (Clip 2, 05: 24). One more problem I had to face was that my hands had cigarette smell and I was not fond of perfumes because hashish and perfume are enemies (Clip 2, 05: 51) because if you use perfume when you smoke hashish, you will eventually get a headache (Clip 2, 05: 57). My family did not have so much awareness about these things, even when I staggered a little; I used to tell my parents I was not feeling well (Clip 2, 06: 15). A big reason they never noticed to my illegal activities was that in class, I was getting around 85% marks (Clip 2, 06: 20).

- ***How did you acknowledge that from an occasional user, you became an addict?***

Beginning of my collage, I smoked a few times, and some other times in a month but later, I started smoking regularly (Clip 2, 07: 01). When I smoked hashish, I realised that I was running out of my pocket money, at that moment I realised that I became an addict (Clip 2, 07: 25). Especially, when I started smoking regularly and I started realising cravings for smoking, then I realised that I needed to smoke (Clip 2, 07: 46).

- ***What challenges did you face in your addicted timeframe to fulfil your needs?***

Since hashish is cheaper compared to opiate, I had no problem during hashish addiction timeframe, however, when I became an opiate addict, I stole money from home (Clip 2, 03: 13). I remember during my opiate addiction I stole around 300,000 PKR (around 20 thousand DKK) and bought opiate for around 4 months (Clip 2, 03: 33).

- ***Can you put your feeling/desire into words when you crave for the ILD?***

When I was craving for hashish, I was getting angry very easily, peevish behaviour, I was not feeling hungry and my blood pressure became high (Clip 2, 08: 29). Moreover, during my opiate addiction timeframe, I vomited, had cramps, struggling to lay down to bed, I felt cold, therefore, I did not often take a shower (Clip 2, 08: 38). Furthermore, if I took sleeping pills, I felt very lazy, could not decide with whom I wanted to talk or what I was supposed to do (Clip 2, 09: 15).

- ***What symptoms and surprising behaviours did you have/develop?***

I mentioned these physical and withdrawal symptoms earlier. Furthermore, I never let them overcome me I nonstop took drugs within these two years (Clip 2, 12: 01).

- ***What were the alternates you adopted when your choice of ILD was not accessible?***

I was trying to find drugs elsewhere and in these two years, it never happened that I could not find it (Clip 2, 12: 45). Yes, I faced money problems but to have ILDs, I was stealing, borrowing from a friend but I would find drugs because I could not take the pain (Clip 2, 13: 02).

- ***Did your close family members (parents and siblings (if any) know about your addiction and what their reaction was?***

My family did not have so much awareness about these things, even I staggered, I used to give them the excuse that I was not feeling well (Clip 2, 06: 15). A big reason that my family never noticed my illegal drugs activities because I was getting around 85% marks (Clip 2, 06: 20).

- ***How did they come to know that you were an addict?***

If I had not told them, they would never have realised that I was an addict (Clip 2, 06: 28). Someone from the outside might have told my father and if someone was asking me, I simply lied to him/her, but my mother did not know that I was an addict (Clip 2, 13: 32). However, when I decided to quit addiction, I

bravely told my mother that I was an addict and asked for help (Clip 2, 13: 42). My mother was all the time in a denial mood; my parents were in a deep depression, they had no money to afford the proper treatment, (Clip 2, 14: 00).

- ***Did your other relative (close/distant) know that you were an addict?***

I think everyone knew that I was doing some illegal activities, but my parents did not know about my addiction (Clip 2, 14: 34). All my cousins knew that I was an addict, in fact, one of them even told my parents but they did not believe him (Clip 2, 14: 53). Sometimes I smoked on the roof, and my uncle was on the other roof too, but he did not take any interest in telling my parents, my life conclusion is that people do not care about you, they simply ignore and say let him do and waste his life like that (Clip 2, 16: 32).

Earlier, one of my cousins told my mother that her son was smoking hashish but she berated him and said that her son could not do that (Clip 2, 15: 16). One of my father's friend told him that his son was smoking hashish, after that, for one week there was very tight control over me but for that time I had my ILDs with me, I acted very normally and did not show that I was smoking hashish (Clip 2, 15: 44). However, later everything became normal and I kept using hashish (Clip 2, 15: 44).

- ***What was their attitude and how did it affect your life?***

My other family members, other friends knew that I was an addict but no one cared. They were not interested in talking to me, spending time with me (Clip 2, 16: 57).

- ***Did the community (neighbour(s), workplace, school) you were around, know that you were an addict and what was their reaction?***

Yes, everyone knew, as I told you I was a very conservative person from the beginning, I did not talk so much to anybody (Clip 2, 17: 32). Especially, towards my neighbours, my attitude did not change (Clip 2, 17: 39).

- ***What was the community (neighbour(s), workplace, school) attitude towards you?***

No one was interested in spending time with me besides my addicted friends (Clip 2, 16: 12). My neighbours used to make fun of me (Clip 2, 17: 57).

- ***What was their attitude and how did it affect your life?***

I can make you understand it by saying that once I was coming back after drinking and my foot slipped and I fell down but no one came close to pick me up (Clip 2, 18: 27).

- ***Did your friends know that you were an addict?***

No one was interested in spending time with me besides my addicted friends (Clip 2, 16: 12). Moreover, today by God's grace, I am not using ILDs, however, regardless of age, almost sobers are themselves addicts (Clip 2, 19: 10). Seems like time has changed (Clip 2, 19: 18).

- ***What was their reaction towards you and your bad habits?***

Boys on the street were mocking me and calling me 'Mr Addict' (Clip 2, 18: 35).

- ***What was their attitude and how did it affect your life?***

They also used to say that he could leave anything but Hashish (Clip 2, 18: 48).

- ***Did some of your friends join later?***

Those boys who used to make fun of me after five to six months also joined me and started taking ILDs with me (Clip 2, 19: 58). As I mentioned earlier, I was a conservative person, I was not into making friends, they came to me themselves and they asked me if I wanted to try hashish with them (Clip 2, 20: 18). After a while, I also came to know that they also became addicts and they also called me a few times in different situations when they asked me to arrange hashish for them (Clip 2, 20: 28). Furthermore, sometimes they also smoked with me (Clip 2, 20: 35). Today I am clean and they are addicts (Clip 2, 20: 44).

- ***Did some of your friends break up their friendship because of your bad habits?***

Because of my personality, I had few friends (Clip 1, 07:42), and when I became an addict, I only made friends among addicts (Clip 2, 16: 12). However, I broke up my friendship with addicts because I am still suffering from cravings.

- ***Did they try to inform some of your family members that you were on the wrong path?***

No, because mostly I ended up having only addicted friends (Clip 2, 16: 12).

- ***When did you realise that you were doing it wrong and you needed help?***

During my first week of smoking hashish, I realised that I had become an addict. I was fully aware that I was doing something wrong, from the first week, I was trying to quit addiction, and it took me two years to leave (Clip 2, 21: 08). Furthermore, when I realised I desperately needed help, I told my family that I needed their help (Clip 2, 21: 14).

- ***Would you like to add/share something more, which you forgot to mention or think I should also know that?***

Now I do not have any problems and worries, if a normal person spends so much money or unnecessarily spends money, talks nonsense with family and thinks this is my nature today being a RA, I only think that was wrong and those ILDs can take me to the same path again (Clip 2, 11: 00).

Furthermore, I do not meet my addicted friends, and I do not have the permission by the NA to meet my addicted friends (Clip 2, 23: 00). Because they told me that, the majority of people relapse because RAs meet their old friends and relapse (Clip 2, 23: 16). It is worth mentioning that NA programme told us that first try to learn how to swim and then teach others (Clip 2, 23: 29).

12.3.2.2. Rehabilitation and Recovery (NA)

- ***What did you/your family do after realising your addiction to start a normal life again?***

When I told my family, they took me to a rehabilitation hospital and I finally started my proper treatment (Clip 2, 14: 11). My doctor told me if had used an ILD for one more week, I could have been dead (Clip 2, 10: 28).

- ***Had you been to a rehabilitation centre or hospitalised?***

Yes, I took a two-month detox treatment (Clip 2, 25: 36).

- ***How was the treatment?***

It was very uncomfortable. I was not allowed to meet with any other person (Clip 2, 25: 39). I was permitted to smoke simple cigarettes (Clip 2, 25: 36).

- ***On the rehabilitation timeframe, how did you handle your surprising behaviours?***

For a few days I was in a very severe pain. During the treatment, the therapist was helping me to work on my treatment (Clip 2, 25: 53).

- ***How often did you use an ILD during rehabilitation timeframe?***

No, I did not use anything because the doctor told me if had used an ILD for one more week, I could have been dead (Clip 2, 10: 28). However, later, sessions with a therapist were introduced to me and it really helped me.

- ***What difficulties were you facing during the treatment?***

I had many mood swings, depression, headaches, often vomited and had difficulty breathing.

- ***How did you start your recovery?***

After my rehabilitation, I joined the NA meeting because I came to know that NA is such a platform where addicts can spell out their inner guilt and when the guilt is out, you start becoming clean and feel strong (Clip 2, 24: 44).

- ***Who introduced you to the NA recovery program?***

The treatment sessions with the therapist, follow-up meetings also introduced me to the NA program (Clip 2, 25: 55). But earlier, I got the permission to go out with one friend who was also an addict and he attended NA meetings for 6 years and introduced me there (Clip 2, 24: 32).

- ***What is the difference between NA and other treatments/therapies?***

NA makes such a community, for instance, today if any person from NA calls me in the middle of the night that he needs my help, I will go to him (Clip 2, 24: 59).

- ***What are/were you seeking by joining the NA support group meeting?***

If I have any problem I am, open to discuss it with other group members and ask for the solution (Clip 2, 25: 20).

- ***Do you think NA is the place you were searching for to get out of addiction?***

Even today if I think about not taking any ILDs only because of NA friendship and NA program (Clip 2, 27: 47). I strongly believe that today I am much better because of the NA program (Clip 2, 28: 12).

Indeed, I had a treatment but if you are locked for a long duration in the room, there is no guarantee that if that person gets a chance to go outside, he will not use ILDs (Clip 2, 28: 35).

- ***On early days of recovery timeframe, how did you handle your surprising behaviours?***

During the setup meeting when other recovered people shared their stories about problems, which sounded very similar to my problems (Clip 2, 27: 31), and when other members suggested solutions, this was giving me strength (Clip 2, 28: 12).

- ***How often did you use the ILD during recovery timeframe?***

After my recovery, I was not allowed to go outside and meet other people and luckily I started going to NA meetings right after I got the permission to go anywhere alone because I was using the ILD (Clip 2, 31: 00).

- ***How often did you fail to control your behaviours?***

I still have mood swings; sometimes I fight outside and even at home (Clip 2, 32: 46). Sometimes I do not understand why I get angry, when there is no reason to be angry (Clip 2, 33: 44). Until today (April 9,

2017), I have been attending meetings for fifteen months and I believe within the next nine months I will stop having these mood swings (Clip 2, 33: 52).

▪ ***When failing to control your craving, what was your choice of ILD?***

After coming back from the rehabilitation hospital, I never used an ILD (Clip 2, 32: 13) I simply tried to change my mind (Clip 2, 31: 31). I think I will feel a craving for my entire life even after 20 years after recovery craving can attack me at any time (Clip 2, 31: 39). Furthermore, for almost 1 year and four months I did not use any ILD (Clip 2, 32: 17).

• ***What is your motivation to join NA's setup meeting?***

There are many counsellors, therapists who have vast experience and they give me answers to any of my questions and when I share my own things with others, I feel much relaxed (Clip 2, 29: 37). In fact, with you, I am talking very openly without any fear, only because I am just coming back from the NA meeting (Clip 2, 29: 43).

I have attended around forty meetings today and even until today thoughts about using ILDs come to my mind, since I regularly attend meetings, I use/take anything (Clip 2, 31: 10).

• ***What are some of the things, which motivate/force you to go to NA?***

I gain motivation from other RAs- friends if I have any problem, I share it with them (Clip 2, 28: 57). Even my family sometimes cannot help me or they do not trust me, so NA really provides me help (Clip 2, 29: 15).

○ ***Does it sometimes occur to you that you do not feel like going to NA anymore?***

There are many people who have left their addictions for a few years (e.g., 10 years, 5 years, and 2 years), during the setup meeting, these recovered addict share their stories about problems, which sounds very similar to my problems (Clip 2, 27: 31).

▪ ***After such swing of behaviour, how do you keep your focus on attending the NA setup meeting?***

I still have sleeping problems and feel cravings, so I tell my family, or I will call some of my friends from NA or go to pray or take a shower, simply try to change my mind (Clip 2, 31: 31).

• ***How did you control yourself not to use anything to satisfy your need during craving timeframe?***

After my recovery, I did not use any ILDs (Clip 2, 31: 00). NA platform provides me with the opportunity to spell my inner guilt out and after that, I feel clean and strong (Clip 2, 24: 44). Like a few months before, I had a very serious craving attack and I called one NA member at 3 am. That friend from NA,

came to me and we went on the ride and while touring the city, he reminded me about damages I had done before and what I am today and gave me some advice, so this kind of solutions we find out ourselves (Clip 2, 35: 20). He advises him that *‘when you look at your past and compare yourself with those who are still addicts, then you will see how much you have succeeded and made recovery’*.

- ***What does NA offer you to start taking recovery process seriously?***

NA meetings give me answers to all my questions and when I share my own things with other members, they advise me using their empirical experience because they have been through the same situation as mine, or sometimes I call a group member and I get an answer to my problems (Clip 2, 34: 45). Besides that, NA also provides *‘Narcotic Anonyms blue book’* which provides a guideline that an addict must spend his/her life according to these 12 steps (Clip 2, 36: 16).

- ***What benefits did you gain after visiting the recovery program?***

The NA recovery first step is that you admit that you were powerless in the face of ILDs, and your life was completely unstructured (Clip 2, 36: 24). Moreover, during the meeting, addicts accept that I was powerless and my life was unstructured. Subsequently, acceptance gives strength to avoid ILDs for my life (Clip 2, 36: 41).

- ***What keeps you motivated to complete the recovery process?***

NA provides such a platform where every single person shares his or her problems. I also have a sponsor with whom I share my deep down sharing (highly personal), which I feel uncomfortable to share while sitting among fifteen to twenty people. My sponsor has been recovered for the last twenty-three years (Clip 2, 38: 22). Sharing with the sponsor provides me the advancement in my thinking (if I am thinking only two steps, sponsor thoughts me additional four steps) and provides the guidance of pros and cons and how to avoid relapse (Clip 2, 37: 48).

Sponsor is a higher power within the community, who is also a recovered addict. To become a sponsor, there are some terms that he must be recovered for at least five to six years and he should be available for 24/7 to provide you help (Clip 2, 38: 08). Moreover, my sponsor is not someone who helped me when I was badly craving, took me on the ride, reminded me of my past and gave me some advice (Clip 2, 38: 18).

- ***What are your plans for future after recovery?***

In that case, I have finished all steps, I have the knowledge about addiction, disease and if anybody in near future asks me a favour to be his/her sponsor, and I would love to help this person (Clip 2, 39: 10). However, I am still recovering and I have been told that before completing my own recovery if I make any contact with other addicts who I know or try to tell their family, I will eventually relapse (Clip 2, 22: 54).

- *Will you continue visiting NA after your recovery?*

My NA visits will never end; it will go on for my rest of my life. NA is a worldwide organisation, if I go anywhere in the world, I will find NA meetings there (Clip 2, 38: 48).

- *Would you like to help other addicts to leave this bad habit after your recovery?*

Yes.

- *What are the most common activities you do during the recovery timeframe?*

I go to college, read books, attend NA meetings regularly and in free time play games (snooker).

- *Do you feel some change in your social life after participating in the recovery program?*

Because of going to the meeting, everything has changed, now only RAs are my friends (Clip 2, 39: 59). After my rehabilitation, I stopped contacts with my previous friends, I was very worried but when I started going to NA meetings where I made other friends, who reminded me of my past and gave me a chance to compare myself with other addicted friends, I realised how much I had achieved and their talk gave me so much strength (Clip 2, 40: 58).

- *Do you feel that after completing your recovery you might start using ILDs again?*

Besides the fact I still crave, I took part in other celebrations where people were taking ILDs, but I did not use anything (Clip 2, 41: 36).

- *Would you like to add/share something more, which you forgot to mention or think I should also know that?*

I think in order to quit addiction, NA program is the most important but first addicts must have a detox treatment. (Clip 2, 41: 59).

12.3.2.3. Video game

- *Are you fond of video games?*

No, I do not play video games, maybe in childhood but not now (Clip 2, 42: 19).

(If the answer is no)

- *Why don't you like to play a video game?*

I am not fond of video games (Clip 2, 42: 23). As I said, earlier when I was a school going boy I was only around my books and when I grew up a little I started using ILDs. (Clip 2, 43: 52).

▪ ***Would you like to play a game on your smartphone?***

If NA tells us to play, why not. Some people who come to the meetings, play games, different types of games, but I do not play any game (Clip 2, 44: 19).

▪ ***Would you like a game to provide you support for your recovery?***

If NA tells me that this game must be played with recovered and RAs, then I will play that game (Clip 2, 43: 07).

• ***Would you like the idea of playing the game with other people who are also recovering the same as you?***

Yes, why not (Clip 2, 45: 46), if RAs can interact with each other (Clip 2, 45: 46).

▪ ***Would you like to play the game with addicts?***

If NA tells me to play the mobile game with the addict(s), I will not play that game (Clip 2, 43: 01). I think by playing a game, a person can get information about NA and process but cannot quit ILDs without taking a detox treatment (Clip 2, 45: 00).

▪ ***Would you like to play the game with those who are recovering?***

If NA tells me that this game must be played with recovery addicts, then I will play that game (Clip 2, 43: 07). It could be a good source of information that RAs can gain, (Clip 2, 45: 15) or to divert attention (Clip 2, 45: 28). If a real identity can be kept secret by playing the game, I think no one can judge anything about somebody I am familiar with because we all have the same condition and situation, only circumstances are different (Clip 2, 50: 41).

▪ ***Would you like to learn about recovery by playing the game?***

Yes. Every recovered/recovering person will help each other during recovery (Clip 2, 43: 24). If I need help during my recovery, I can also go and meet other recovering/recovered people or call recovering/recovered friends (Clip 2, 46: 45). If one person is busy, I will call another one and if he/she is busy, then I will keep calling until someone is available (Clip 2, 49: 24). However, I think this is also a good idea to make a bigger community where many recovered people are available (Clip 2, 47: 25). However, I would like to keep my real identity secret (Clip 2, 48: 17), once an addict is always an addict, I still have addiction label but inside I know that I do not use any ILDs (Clip 2, 48: 49). If I see that the game is helpful and really benefits my recovery, I will play longer (Clip 2, 47: 45).

▪ ***Would you like to learn about healthy activities by playing the game?***

I am not into physical exercise like running, jogging, and the gym, but other activities than that yes.

- *What kind of elements could you think of a mobile game should have for those who are recovering?*

I think, if possible it should include information about recovery program, NA meetings, and NA 12 steps and NA literature, this will serve the best (Clip 2, 46: 13).

- *Would you like to help someone to develop the concept of the game?*

I do not have so much knowledge of a game development. I have shared most I know (Clip 2, 51: 01).

- *Would you like to add/share something more, which you forgot to mention or think I should also know that?*

Most welcome, I felt nice talking to you, recalling so many things, now feeling strong. When you visit Pakistan, please call/text me.

12.3.3. INTERVIEW 3

The participant of the third interview is a 25 years of married male who became an addict in age of 16. I gave him pseudonym MCNNA.

12.3.3.1. Addiction

- How would you describe the beginning of the ILD use?

It was 2012 when I began the final year of high school (Clip 1, 00:32). In my school, I made some friends and some of them happened to be drug addicts (Clip 1, 00:44). They often used to smoke hashish and I made a link with them (Clip 1, 00:51). Since they were my class fellows, I became more attached to those students smoking hashish for real, because they inspired me (Clip 1, 01:12). In addition, eventually I also started smoking hashish and my first ILD was hashish (Clip 1, 01:25). For one year, I was not a proper addict (Clip 1, 01:38). I used to smoke mostly at weekends and somewhere in the middle of the week, after 3 to 4 days I started smoking (Clip 1, 01:45). On this timeframe, I also did not understand it (Clip 1, 01:52), I had withdrawal symptoms, but I was not aware of what the withdrawal symptoms were (Clip 1, 02:01). When I craved, I used to visit my friend and I used to smoke with him to feel relaxed (Clip 1, 02:08). Since I was not aware of cravings, I went to my friend to smoke every 2nd or 3rd day (Clip 1, 02:12). I was continuously doing it for around one or a little more than a year (Clip 1, 02:17). After finishing school, when I went to college, I found those types of friends (who smoked hashish) (Clip 1, 02:27). That was the time when I indeed started using hashish on a daily basis (Clip 1, 02:37).

- *Did you think that you were only doing it for the sake of fun and would not use it regularly?*

Yes, I really started this for sake of fun and one or two years I could not understand anything (Clip 1, 05:23) (Clip 1, 08:02). I was thinking I could stop using ILDs at any moment (Clip 1, 10:10). However, after one or two years, I came to know that I have become an addict of hashish (Clip 1, 05:29), (Clip 1, 10:18). With the passage of time from two to three days break, I start smoking on daily bases and quantity level increased (Clip 1, 05:44). It was like that I used to smoke only on weekend and few days stay, smoke and two to three days stay (Clip 1, 06:20). In order to use it, I used to smoke at my friend's place and there is some special area where addict personalities used to smoke ILDs e.g., graveyards, useless train-lines area, grounds which they believe it is much safer (Clip 1, 07:06).

○ ***How many ILDs did you use and which one became your ILD of choice?***

Until 2014, I only used to smoke hashish (Clip 1, 02:45). After 2014, I went on to try various drugs, i.e., alcohol, weed, spice, skunk, sleeping and dancing pills when I partied (Clip 1, 03:11), I went on to try various ILDs including cocaine, but cocaine only sometimes (Clip 1, 03:36). In pills, I used to take a sleeping pill and dancing pills, which I only used to take during a party (Clip 1, 03:54). What's more, I used to mix sleeping pills with alcohol, but eventually hashish and weed remained my choice of ILDs (Clip 1, 04:48). I think it is because of my financial level (Clip 1, 07:38), since few ILDs are new in Pakistan, therefore they are very expensive (Clip 1, 07:46), but whenever I had more money, I also used other ILDs (Clip 1, 08:06).

▪ ***How long had you been using the ILD(s)?***

For around four and a half to five years (Clip 1, 11:22). For around a year, I smoked twice and thrice a week (Clip 1, 11:41) but later when I went to college, I became an addict and used drugs on a daily basis with the quantity of hashish gradually increasing.

○ ***When you were using the ILD(s), were you aware of the possible dangers to your life?***

When I smoked hashish in my first year, I really did not know about this (Clip 1, 12:06). However, after a year, I came to know about the kind of effects left on me and on my personality (Clip 1, 12:21) but by then I had become an addict (Clip 1, 12:32).

▪ ***Do you blame your immaturity for this?***

I had no problem from my family side or I was not a tense person (Clip 1, 08:07), just used drugs for the sake of fun and when I realised and wanted to quit, by that time I was an addict (Clip 1, 12:41). First year I really did not understand what was happening to me and when my first year passed in conflicts, and when I came from twice a week to a daily basis, and the quantity of ILDs increased, I realised that my expenses had increased and especially my values at home and in the neighbouring community became very low (Clip 1, 14:41). In addition, I ended up in that condition that with or without ILDs, I was not satisfied (Clip 1, 14:53).

- ***What motivated/pressured you?***

I used drugs for the sake of fun (Clip 1, 08:43), made friends who used to smoke hashish (Clip 1, 08:47). I had no problem at home, they were really supporting me financially and I started having so much money in my pocket all the time that I started spending my pocket money on ILDs (Clip 1, 15:37). In the beginning, I felt very relaxed (Clip 1, 15:41), but later sex became very important, I think the most important thing (Clip 1, 08:19). In my opinion, ILD addiction is such a thing that overtakes everything and reduces or almost destroys the will to leave addiction (Clip 1, 16:08). Therefore, for a long time, I looked for the reason why I was continuing addiction, and finally last year (2016) I came to know why I was keen on living in addiction (Clip 1, 16:29), why I used to take ILDs (Clip 1, 08:54) and that was sex. Because after using ILDs, sex duration and pleasure both increases. The first year just for relaxation and when I became an addict, I started using drugs for masturbation and for sex purposes (Clip 1, 17:05).

- ***What thing/phenomena forced you to use the ILD(s)?***

During my addiction timeframe, the desire to have my ILDs with me was the only thing that counted (Clip 1, 12:47). My thinking power, willing power (Clip 1, 17:40), became very weak and I got used to spending time being high (Clip 1, 12:58). When I was not high, I craved (Clip 1, 13:04) and my withdrawal symptoms overtook me e.g., becoming angry, less sustainable and I was only thinking of somehow making money and using ILDs (Clip 1, 13:26). An addicted person falls prey in the hands of the complex(s) and starts noticing minor things which any normal person does not take into any consideration e.g., that my father or my friend said something (Clip 1, 18:01). Moreover, when these small little things became a matter to me, I started thinking about those things, pushing myself to bring improvement inside me (Clip 1, 18:16).

- ***How were you getting your ILD(s)?***

As I mentioned before, when I was in the final year of high school, I used to get 10000 PKRS (650 DKK), therefore, very easily I used to arrange my ILDs (Clip 1, 19:20). In the first year, I easily used to manage everything within this money (Clip 1, 19:26). In the beginning, my addicted friends had links with not only distributors, but also with the dealers who supplied distributors (Clip 1, 19:53). Therefore, through them, I used to arrange ILDs at the beginning (Clip 1, 19:57). However, after a while, I made my own direct link with bigger dealers (Clip 1, 20:03). Even in my area, there were many distributors, but I only had a link with four to five of them (Clip 1, 20:31). However, I had no contact with these distributors, but I made my link with that dealer who supplied those distributors (Clip 1, 20:52).

- ***How were you hiding the ILD(s)?***

I used to hide them mostly in my wallet, in my socks, in my shoes, even in the small pocket of jeans and later kept it in my own drawer at home (Clip 1, 21:26). I used to hide it in a place, which I thought was safe (Clip 1, 21:43).

- ***What was your normal routine?***

In advance, I used to prepare my cigarette at night for the next morning (Clip 1, 22:16). When going to college, I skipped going as much as I could (Clip 1, 22:29). I did not appear at my college (Clip 1, 22:42). When I started my college, I only appeared there for the first two or three months and during those months, I used drugs in college toilets (Clip 1, 23:01). In addition, I used to smoke at home and then when going to college or during breaks, I went to some safe place where I smoked hashish (Clip 1, 23:10).

- ***How hard was it for you to get your choice of drug(s) and fulfil yourself?***

Because of my addiction, I stopped going to college. Since the quantity of drugs increased, my links also increased (Clip 1, 23:29). My friends were also with me, sometimes friends afforded me and sometimes I afforded my friends because I started running out of money (Clip 1, 23:41). Therefore, I misused my college fee and private academy fee to buy hashish (Clip 1, 23:46). Furthermore, at the same time I also started stealing money from home (Clip 1, 23:56). Since the quantity increased, it became harder to afford it, and finally, I left my college (Clip 1, 24:22).

- ***How did you acknowledge that from an occasional user, you became an addict?***

I came to know it from the reaction of the community toward me because my link was only with addicted people (Clip 1, 24:56). I was not around normal people, who do not smoke hashish or are involved in any other bad habits (Clip 1, 25:01). The neighbourhood community came to know that I had become an addict because I was often around old/senior addicts (Clip 1, 25:10). Because of the neighbourhood, the community, my family came to know it (Clip 1, 25:12). My personality and the values I used to have when I was not an addict gradually decreased (Clip 1, 25:23).

- ***What challenges did you face in your addicted timeframe to fulfil your needs?***

I start for sake of fun, and later start doing on daily basis (Clip 1, 26:01). When I started on a daily basis, I realised that I start running out of money and at any cost, it was important to arrange my ILD(s) (Clip 1, 26:18).

- ***Can you put your feeling/desire into words when you crave for the ILD?***

I could not find peace, felt restless until I got it (Clip 1, 26:35). I started becoming angry very easily (Clip 1, 26:40). Because I could not handle my anger, I could not bear the pain (Clip 1, 27:09) and in my mind, there was only one thing - I wanted to relax (Clip 1, 25:16). When I used ILDs at night and fell asleep, the moment I got up, my first thought was the use of it again (if available), or arranging it (if not available) (Clip 1, 29:28). Moreover, the day when I was unable to arrange my choice of ILD(s) was painful for me (Clip 1, 29:38). That day I could not handle my craving, I was getting angry with even

minor things (Clip 1, 29:47). And in relation to my family, I started having negative thoughts in my mind (Clip 1, 29:52), because I used to think my family were unable to understand me, my values were very low, they did not love me anymore, they taunted or beat me and did not treat me as a family member anymore (Clip 1, 30:11).

Furthermore, when I could not control or bear the craving anymore (Clip 1, 26:58), I started having withdrawal symptoms (Clip 1, 30:23). At angry moments, I started cutting my body with blades (Clip 1, 26:58), (Clip 1, 30:30). The addiction timeframe was really rough and difficult for me (Clip 1, 30:56). However, I am still thankful because of my addiction, even though I was addicted and suffered a lot, I gained some benefits (Clip 1, 31:22). I have faith in this that I understood many things early enough (Clip 1, 31: 32), became more accurate when judging people (Clip 1, 31: 41). If someone is talking to me, I can read his tone of talk (Clip 1, 31: 50), view of other people's eyes even if this person is my brother or father (Clip 1, 32: 01). I believe that I have experienced enough hustles in my life and I have learned from those mistakes and today I am enjoying a good life (Clip 1, 32: 21). This is the only advantage I can think of, the rest of my addiction destroyed me, I was a very bright student but because of my addiction, I could not finish my education (Clip 1, 32: 48). Even though I am still studying, I feel I cannot study anymore like I used to (Clip 1, 32: 58).

- ***What symptoms and surprising behaviours did you have/develop?***

When I could not control or bear cravings anymore (Clip 1, 26:58), I started having withdrawal symptoms (Clip 1, 30:23). At angry moments, I started cutting my body with blades (Clip 1, 26:58), (Clip 1, 30:30). The addiction timeframe was really rough and difficult for me (Clip 1, 30:56). However, I am still thankful because of my addiction, even though I was addicted and suffered a lot because of this; I still gained some benefits (Clip 1, 31:22).

- ***What were the alternates you adopted when your choice of ILD was not accessible?***

At the beginning of my hashish addiction timeframe, when hashish was not available, I used to drink 'bhang' (edible preparation of cannabis) (Clip 1, 33:48). I also had my links in places where people prepared bhang e.g., graveyards, in different areas (private settlements), so I used to drink it (Clip 1, 34:01) until I did not reach the same level I used to reach by smoking hashish (Clip 1, 34:09). Moreover, when Bhang was also not available, I used to take sleeping pills (Clip 1, 34:15). Sleeping pills were different/high potency that used to make me feel much higher, the same level heroin can make (Clip 1, 34:28). There were only a few occasions (Clip 1, 34:41) when I took sleeping pills with alcohol (Clip 1, 36:11). However, when I did not get my first choice, I used to choose something similar to it (Clip 1, 34:41). In case I got a jackpot (stole money, summer college fee), I had a good amount of money, I did not use hashish but I chose weed (Clip 1, 34:51). Weed is comparatively more expensive than hashish because it is quite new in Pakistan on the ILD market (Clip 1, 35:06). Bigger dealers are importing these ILDs from the outside e.g., weed, spice and skunk, these ILDs are very rare right now (Clip 1, 35:24). Weed became a little bit more accessible but spice and skunk are still rare (Clip 1, 35:36). I only tried it under two conditions, I had a good amount or my friends did, or my friend had it, so I smoked with him

(Clip 1, 35:50). However, I used to buy sleeping pills (used on a few occasions) alcohol, bhang, hashish for myself (Clip 1, 36:11).

- ***Did your close family members (parents and siblings (if any) know about your addiction and what their reaction was?***

When my family came to know about my addiction, they locked me in the room, I was not allowed to go outside, they strictly controlled me (Clip 1, 25:30), I received very strict feedback (Clip 1, 27:49) they stopped supporting me financially (Clip 1, 10:35), my family took away my mobile (Clip 1, 27:55). When I finally made my way outside the house, after a few minutes I got calls from home to tell them where I was and what I was doing (Clip 1, 28:07). My family also warned me that this was my area and I would not go any further but only stay in this area (Clip 1, 28:09). It was a big shock for them (Clip 1, 36:35). In my entire family, there was no one who was an addict (Clip 1, 36:38). In my family, I was the youngest and most adored son, everyone really used to love me; I had values at home and in the family and when my family came to know about addiction, they were all shocked (Clip 1, 37:03).

Especially my mother was really worried and other elder family members e.g., my father and elder brother, who has higher experience than me assumed them that I would destroy my future, I would go further in addiction and their feedback was really hard on me (Clip 1, 37:22). They gave me lectures with love and aggression both, but at that time, their arguments went in one ear and out the other, and did not change my lifestyle (Clip 1, 37:39). I changed my routine a little bit for a while to arrange my hashish, bring it home and smoke in the toilet or on the roof. When I smoked in the toilet, I used to do it close to an exhaust fan and after finishing, I used to spray an air freshener, so the smell would not go outside (Clip 1, 38:11).

- ***How did they come to know that you were an addict?***

A few of my friends from the non-addict group told my parents that their son was really taking higher steps (Clip 2, 17:26). My family came to know about my addiction because they started getting negative vibes from the outside community (Clip 2, 17:34). I think first they had a doubt by looking at my choice of friends who were all addicts; I ended up mostly around addict personalities (Clip 1, 38:51). Furthermore, their doubt turned into reality when they caught me smoking at home and they discovered hashish (Clip 1, 39:03). Before they had doubts, but when they caught me, I surrender myself and told them everything e.g., how much I had used and how long I had been using drugs (Clip 1, 39:34).

The day my father caught me was when I was smoking in the toilet, I made a cigarette, smoked but I forgot my hashish and left it close to the mirror. When I sprayed freshener in the air and went outside, my father immediately went inside to use the toilet, and before locking the door, he opened the door again my leftover hashish in his hand (Clip 1, 42:05). He had had doubts before, but later when he found hashish, he came directly to me and asked me what it was, but I simply rejected everything and said it is not mine (Clip 1, 42:11). After my answer, he checked my pockets, he found one pack of cigarettes, and when he opened that packet, there were cigarettes prepared by me (Clip 1, 42:19). When he found it, in order to be safe from his anger and beating, I admitted that they were mine (Clip 1, 42:38). After that day, my family members focused all their attention on me (Clip 1, 39:42).

- ***Did your other relative (close/distant) know that you were an addict?***

As I said before, only family knew about my addiction (Clip 1, 40:15). My other relatives had doubts, therefore, they did not talk to me directly, but they talked about my activities with my father and my brother (Clip 1, 40:24). They also had doubts, but when they saw me in some places smoking hashish, or sitting with addicts, witnessed me making cigarettes, they told them about everything (Clip 1, 40:42). Separately, they also explained me, initially, I rejected, in fact, I showed my anger by accusing how they could even think like that (Clip 1, 40:57). After that, they also talked with my father and brother, but when I was caught red-handed because a thief cannot have a safe rest of his life (Clip 1, 41:15).

- ***What was their attitude and how did it affect your life?***

In the beginning, when they talked to me, I just thought that when their talk finished, I would go outside and find peace (Clip 1, 43:25). Not only during everyday meetings with family, but also whenever I came back from the outside, they used to search my pockets, my shoes, socks and everything (Clip 1, 43:59). My family completely stopped giving me money, when they gave me a little money, they were asking me questions where I spent money, and when I told them how I spent that money e.g., I drank juice, ate chocolate or biscuits, played snooker, ate Paan, in this case my father or my brother would take me to confirm whether I did that or not.

- ***Did the community (neighbour(s), workplace, school) you were around, know that you are an addict and what was their reaction?***

When my own family members have seen me smoking hashish, neighbours saw me more than anybody did (Clip 1, 45:39). If I will go a little away from my street e.g., another place, inside some rickshaw stand of course someone from my street will see me there (Clip 1, 45:53). Someone from street mostly was around when I used to go to the park or visit my addict friends (Clip 1, 46:08).

- ***What was the community (neighbour(s), workplace, school) attitude towards you, and how this affected your life?***

Neighbours' behaviour became very specific, e.g., just greetings, if they want me to do one favour otherwise they did not interfere in any of my business (Clip 1, 47:01). Neighbours start also taunting me and non-addict people stopped meeting me (Clip 1, 25:39). I listen to many stations (Clip 1, 10:39).

- ***Did your friends know that you are an addict?***

First, when I was around ILDs users I felt very negative vibes around them (Clip 2, 03:17). I was smoking hashish illicitly very fast to my friends, because of my social meetings were mostly with addicts (Clip 2, 01:13). Friends were aware of my every ILD activities if someone will see me smoking hashish and this one person will tell next 10 other friends and chain of denouncing will continue (Clip 2, 01:40).

When I became proper addict then not only friends but also other people also came to know about my addiction (Clip 2, 02:25). Other community, e.g., school and private academy not only friends but also other people came to know about my addiction (Clip 2, 02:59). When I was high, I had a feeling that boy from neighbourhood really misprizes me, however, but deep inside they were inspired by me (Clip 1, 47:55).

○ *How was their reaction towards you and on your habits?*

Some of my friends who were sincere to me they talk to me (Clip 2, 02:59). Some of my friends they were just looking at me from distance and with the passage of time, they completely took a side (Clip 2, 04:09). However, some of them kept a normal relationship with me but did not say anything to me (Clip 2, 04:24) but were talking on my back to other people (Clip 2, 04:32). Any of my friends who were not smoking with me talk to others e.g., classmates, their other friends and tell them about my addiction but did not tell my family (Clip 2, 05:29). However, after a while gossip about me were approaching to me that person was using such words for you (Clip 2, 05:33). If gossips were approaching to any of my addict friends then he will tell me that person was saying this about you (Clip 2, 06:06).

▪ *How was their attitude and how this affected your life?*

During my addiction time, when gossips were approaching to me then I used to deaf my ear to these talk but sometimes I was getting hipper (Clip 2, 07:23). Sometimes I stopped socialising with those friends (Clip 2, 07:34). It is all about on my mood swings (Clip 2, 07:45). If someone is talking fine with me but was talking on my back, in this case, I also stop socialising with them (Clip 2, 08:20). This thing affected me like I felt more depressed, and became a victim of complexes because of these talks/gossips (Clip 2, 08:42). I was not like that in the beginning of addiction, that I am doing anything wrong, but when I became proper addiction friends talk were all the time in my mind and start hunted me, and got complex feelings then I realised that I am wrong and if this continued like that then be prepare for similar reaction in coming future (Clip 2, 10:03). And because of this I got feeling that I cannot continue like this (Clip 2, 10:15). It was the reaction I got from my non-addict community e.g., friends, neighbours (Clip 2, 11:26) and the main I got from the family side and the feeling builds up inside me that I cannot continue like this (Clip 2, 11:54).

○ *Did some of your friends join later?*

I came to know that, some boys from young generation and some from my generation are inspired with me when the same boys from the street came to me and told me that we also want to try hashish (Clip 1, 48:04). There are many people in the street who smoke hashish for a long time in my neighbourhood and I was the only one who was from the new generation, therefore when they approached me I put everyone on addiction (Clip 1, 48:33). All these boys from a new generation who mostly stands in the corner of the street are mostly because of me in addiction (Clip 1, 49:13). I used to smoke with or around my addict, friends and non-addict friends do not want to smoke with me so I have smoked alone (Clip 1, 49:37). But I had a very limited relationship with non-addicts, some of them advised me so I used to react to them that time and did fight with them (Clip 1, 50:01). After a while I stop contacting them those who hated me, or

did make fun of me especially on few incidents in the life when I came high in my street especially when I was high on heroin or alcohol but when I was high from heroin I was in another type of personality e.g., extra genius they used to make fun of me (Clip 1, 50:28). Today, I am still friends with them who used to advised me, but those who hated me, or made fun of me in past all of them are addict today (Clip 1, 51:48). It is not that because they were making fun of me so I put them on ILDs but they were inspired ILDs, some of them were my friend send some were neighbourhood new generation and they approached me themselves to arrange (Clip 1, 53:41). In the beginning, they did not tell me that it was for them but they told me it is for our friend who is coming so please buy for us as well (Clip 1, 53:52). I know they wanted to try for themselves and since I was the only single link to arrange ILDs for them, I was buying for them (Clip 1, 54:01). However, after a little, while they did show off the front of me that we also smoke hashish then we start smoking hashish together (Clip 1, 54:18). Because I have understood them, and by then I also came to know about the disease of addiction, that in the beginning it give pleasure, mind level completely change which they were not aware of and instead of advising them I also put them in addiction (Clip 1, 55:07).

○ *Did some of your friends break up their friendship because of your bad habits?*

Some of them used to look at me from distance and with the passage of time they completely took a side (Clip 2, 04:09), but I came to know that because of my addiction they step aside (Clip 2, 14:10). None of them came to me and said directly on my face that you are an addict and because of addiction, I cannot be your friend (Clip 2, 14:23). However, some of them kept a normal relationship with me but did not say anything to me (Clip 2, 04:24) but were talking on my back to other people (Clip 2, 04:32). But I had a very limited relationship with non-addicts, some of them advised me so I used to react to them that time and did fight with them (Clip 1, 50:01). After a while, I stop contacting them (Clip 1, 50:28). Some of them step back because of my addiction, some of them step back because of my family reaction (because they were addicts), from some of them I step back because they were not talking nice about me on my back (Clip 2, 14:56). In the end, when I was proper addiction there was no one who stood next to me and did not use any ILDs (Clip 2, 15:56). Especially when I was high, since non-addict friends do not admire ILDs, they really stayed away from me (Clip 2, 16:17).

○ *Did they try to inform some of your family members that you were on the wrong path?*

Everyone tried to inform my family about my addiction (Clip 1, 55:24). Every second day there was someone complaining or telling to my family (Clip 1, 55:35). Therefore, my family put a spy on me to keep an eye on me and inform them of my possible spots (Clip 1, 50:47).

● *When did you realise that you were doing it wrong and you needed help?*

When my family put a spy on me there was no place where I can hide, before my arrival whole report of my activity were front of my family (Clip 1, 56:24). After a while when the freedom area became very narrow on me I realised that I cannot survive like this and I can't destroy my whole life like this (Clip 1, 57:12). I had to face so many problems, and I could not handle those problems (Clip 1, 57:18). I fall prey

on the hands of the complex(s) (Clip 1, 10:19) and even after use of any ILDs, I was not satisfied (Clip 1, 57:32). I had used so many ILDs that in my body there was an only ILD, and no matter how much I smoke hashish I was not getting near the same pleasure I used to get (Clip 1, 57:41). I start facing problems from family, from neighbours and community and because of these issues leaving addiction came in my mind (Clip 1, 58:17). It was the reaction I got from my non-addict community e.g., friends, neighbors (Clip 2, 11:26) and the main I got from family side because mostly I was spending time with my friends and later a feeling build up inside me that I cannot continue like this (Clip 2, 11:54) and thoughts came in my mind that I must stop my addiction (Clip 2, 12:48).

I think my will power which was completely dead in the begging became alive start rising and I feel the power that without using ILDs I should face my disease (Clip 1, 58:53). When I felt that power then I requested my family to provide me with some solution, therefore, first I talk to my father, that the time has come that I leave my addition because I cannot bear anymore (Clip 1, 59:09). I start understanding those things, which I used to turn the deaf ear to advisers because of my addiction (Clip 1, 59:23). My mentality level changed and my life got a turn towards my recovery (Clip 1, 59:39).

- ***Would you like to add/share something more, which you forgot to mention or think I should also know that?***

I have faith in this that I understood many things before time (Clip 1, 31: 32), came more accuracy in judging people (Clip 1, 31: 41). If someone is talking to me, I can read his tone of talk (Clip 1, 31: 50), view of eyes on other people even if this person is my brother or father (Clip 1, 32: 01). I believe that I have beard enough hustles in my life and I have learned from those mistakes and today I am spending good life (Clip 1, 32: 21). This is the only advantage I can think of the rest addiction destroyed me, I was a very bright student but because of addiction, I could not finish my education (Clip 1, 32: 48). Even I am still studying, but the way I used to study before I feel that I cannot study anymore as before (Clip 1, 32: 58).

During my addiction, I had a continuous feeling that *'I wish I had not taken my first cigarette that day for sake of fun'* and this feeling was coming in my head before smoking and after smoking cigarette(s) (Clip 2, 19:11). I had continuous feeling either I smoked, used alcohol, or use any other ILD, *'I wish I had not taken my first cigarette that day for sake of fun'* so I won't be at this stage (Clip 2, 19:30) but because of my craving and withdrawals I had to use it again (Clip 2, 20:01).

12.3.3.2. Rehabilitation and Recovery (NA)

- ***What you/your family did after realising about the disease of addiction to start a normal life again?***

When my father caught me red-handed, I told him each and everything, therefore, in order to get advice from other family members they told them about my condition where one family member advised him to provide me rehab treatment (Clip 2, 26:16). However, when my family took me to rehabilitation centre we came to know about really high expenses (Clip 2, 26:35), almost 13000 DKK was expense there per month (Clip 2, 28:10), which includes only food, reserve bed and medicine (Clip 2, 28:24). However,

staff from there advised use that there are also other rehab centres where you can give treatment for less money (Clip 2, 27:04). I know before going there that there are many rehabilitation centres which offer free of cost or very less amount of treatment, however, I also know that for addictions rehabilitation treatment is also very important (Clip 2, 27:38). However, Doctor from good rehabilitation centre referred me some medicines that I took for one month (Clip 2, 27:45).

- ***Had you been to a rehabilitation centre or hospitalised?***

No, I was not admitted to a rehabilitation centre because it was expensive and my family could not afford such expenses (Clip 2, 27:58), therefore, the doctor referred some medicines for me that I was taking outdoor by myself (Clip 2, 30:46).

- ***How was the treatment?***

I used around one month those medicines but by using these medicines, I did not feel any difference (Clip 2, 31:04). I stayed addict even I was taking those medicines (Clip 2, 31:14).

- ***On the rehabilitation timeframe, how did you handle your surprising behaviours?***

I kept using medicines alongside with my addiction that I took as an advantage (Clip 2, 31:24). Advantage as a sense that my family was thinking I am using medicines and not using any ILDs but I kept using both (Clip 2, 31:38). However, I gained disadvantage by taking medicine (Clip 2, 32:04).

- ***How often were you using the ILD during rehabilitation timeframe?***

The disadvantage in the sense that after using this medicine my capacity of taking ILDs increased this much that I felt very lazy (Clip 2, 32:19). Since these medicines had steroids so I was feeling extra hungry and I was eating a lot, therefore, my capacity of taking ILDs also increased (Clip 2, 32:36). Since I start eating a lot, I start gaining weight, therefore, my family start thinking I am recovering but in reality, I start smoking double joints (Clip 2, 33:09).

- ***What difficulties were you facing during the treatment?***

If sometimes my family found me high then I used to tell them that this is because of medicines (Clip 2, 33:36). However, after a month, I start gain confident of my family alongside outside community e.g., friends, neighbours (Clip 2, 34:28). During this trust building timeframe I set my own timetable to use ILDs (Clip 2, 34:33) like at night I will just smoke one or two joints (Clip 2, 35:11). However, when I stopped taking medicines, my capacity of taking ILDs came to a normal level again (Clip 2, 34:43), then I also tried to reduce my ILD amount low to lower slowly (Clip 2, 35:02). Furthermore, when my quantity became low on that timeframe I became busy with other activities i.e. started my job, and skip my college (Clip 2, 35:58).

The job really affected me because I was exteamly busy at work and when at night, I was coming back to home then I was smoking one joint (Clip 2, 36:21). That time my family have gained my trust (Clip 2,

36:35) they were thinking I spent all day at work and if after coming back I was spending a little time outside so it was totally fine (Clip 2, 36:52). If after work, I was spending time outside so it was only because I want to smoke joint(s) but I was not spending so much time outside, because I start realising my responsibilities and start taking my job seriously (Clip 2, 37:05). Being busy at job realised me that with this lifestyle I can cure myself (Clip 2, 37:14). Slowly, my craving level also reduces because my capacity of smoking also reduced (Clip 2, 38:24).

- ***How did you start your recovery?***

Because of my busy lifestyle my craving gradually low and because my capacity of smoking joints also reduce then my mind start opening towards other possibilities (Clip 2, 40:13). The mind which was completely locked because of my addiction start opening and I start understanding those things which I was unable to understand before (Clip 2, 40:31). When I start exploring things differently than I started work on me e.g., I made my own schedules by keeping my own craving, mood swings, change in behaviours and start thinking to stay away from drugs (Clip 2, 41:00). After a while, I realised that when I used to be at work, keeping myself busy in different activities then use any ILDs did not come in mind, but when I am free or off from work then use of ILDs used to come in my mind (Clip 2, 41:21). Then I understood that when I do not have anything to do I use ILDs (Clip 2, 41:25). Therefore, I started doing overtimes on my job, which turn out positive sign of my life and turned out as good decision (Clip 2, 41:42). Instead of 10 hours work I start doing 12 hours work without any force (Clip 2, 41:55) and gradually came back to my first year routine when I started smoking first time (Clip 2, 42:11), like only used on holidays and if somewhere during week got free time then smoked little bit (Clip 2, 42:17). I completely gained back my family and neighbourhood trust, my feeling became strong because I stop meeting with addict friends (Clip 2, 44:29). Furthermore, I start gained back my non-addict friendship and made new non-addict (Clip 2, 44:20). Outside community also noticed that I have changed now (Clip 2, 44:06), since I stopped meeting my addict friends because I became busy elsewhere and had no time to spend with them (Clip 2, 44:29). Almost 6 months I continue addictions like I used to do in the beginning of my addiction era (Clip 2, 44:54), e.g., when I am off from work, or I finished my work earlier (Clip 2, 45:01). That day I was not meeting to any addict, met non-addict friends and send vibes that I am fine now, if still, I want to smoke joint, then I was aware of each and everything e.g., where to find, cost, making joint technique, so I didn't need to feel anything/body (Clip 2, 45:29). However, I was buying a really little bit, the amount I could easily finish at once on the same day (Clip 2, 42:38). These six months I smoke joints as if it was only between me and my Allah (God) (Clip 2, 45:57). I really got positive and very nice responses, which were lacking in reality which I, needed (Clip 2, 46:22). I felt that I got my lost repete back and these values left very positive effects on me, which encouraged me to completely leave my addiction (Clip 2, 46:57). Therefore, in 2016, I finally joined NA (Clip 2, 46:57), where I saw those people who have left addiction for 10 to 15 years (Clip 2, 47:10).

- ***Who introduced you to NA recovery program?***

I went with my one friend who also addicted with me before. In the begging, I had no knowledge of NA, and when I came to know about NA and went to meeting where I saw many people, who were sharing their stories, e.g., it been 5, some said 2, some 10, some 20, some 1 everyone was telling how long they

have left their addiction (Clip 2, 53:17). Everyone was sharing when I was doing this I had this outcome (Clip 2, 53:22). In addition, they were also sharing which things attracted them so they left their addiction, I thought all of these people are lying; everyone uses ILDs (Clip 2, 53:43). I was thinking everyone is drowsy and they all are doing addiction and this is just like a staged drama (Clip 2, 53:42). After a while, I also did my sharing that I am also an addict but I am still a user of ILDs, and this benefited me that there were so many who shared their advice with me (Clip 2, 54:12).

○ ***What is the difference between NA and other treatments/therapies?***

Rehabilitation centre treatment does not permit to use anything e.g., eat Paan or smoke cigarette (Clip 3, 12:07), rehab centre said take medicine and bear the pain (Clip 3, 12:20), only tell medical solutions (Clip 3, 13:34). This is one of the reasons NA is successful because rehab is unable to understand that their process is not very efficient. Cigarette, Paan, Gutka even normal person also use and acceptable (Clip 3, 12:43), it does not come under such addiction. NA tells an addict life's practical and solutions (Clip 3, 13:45).

Since normal people did not use ILDs, therefore, they do not know the torture of addiction's sickness and cravenness (Clip 2, 51:02). Normal people only know that these are addicts and they are addicted to ILDs, they will die without this therefore, they cannot stop the use of ILDs (Clip 2, 51:19). In addition, on NA meetings, when I share my problems or anything, recovered/RA's previously experienced problems came front of them (Clip 2, 52:09) and situations were similar to the most people who are part of the meeting (Clip 2, 52:25). Because all those people have been in a similar situation which I had (Clip 2, 48:00). They also read the same book that, I was reading, therefore they recommended me better solutions (Clip 2, 48:08).

○ ***What you are/were seeking by joining the NA support group meeting?***

At NA, all those addicts who have left addiction for 10 to 15 years come to the meeting, their sharing were really helped me (Clip 2, 47:16). We all members shares our life's practical e.g., what I did in my addict life, when change in my life where I used ILDs often to sometimes and during this time I was suffering from behaviours all such details I used to share there and in return I get solution of my problems (Clip 2, 47:48).

▪ ***Do you think NA is the place you were searching for to get out of addiction?***

NA meetings and RAs sharing really helped me out (Clip 2, 47:16). Not in the begging but later came in my mind that yes this is the way I can leave my addiction (Clip 3, 00:27). All those people really supported me, they also told me that we are also human and have left addiction, therefore my confidence level became more high (Clip 3, 00:50). I felt more strength in my willpower (Clip 3, 00:54). After a while, I realised that this is a reality and I can leave my addiction (Clip 3, 01:18).

● ***On early days of recovery timeframe, how did you handle your surprising behaviours?***

In the begging, in order to handle my surprising behaviour especially my withdrawals, I had only one strategy and that was using my favourite ILD (hashish) (Clip 3, 01:58). My recovery process actually starts when my capacity became low, then my craving also came down and as same level as my capacity i.e., I was smoking 5 joints it's because my craving was only for 5 cigarettes (Clip 3, 02:49). I still seek help from NA whenever I crave I share with them that I crave or having withdrawals (Clip 3, 03:21), until now I crave, I seek help from NA, e.g., I call some senior person from NA meetings, even I do not have proper condition to go anywhere someone from NA will come to me and try to reduce/finish my craving (Clip 3, 03:41). During the call they try to reduce/finish my craving by giving me advice, which no normal person can advise me; this I think is the most helpful by going to NA (Clip 3, 03:59).

- ***How often were you using the ILD during recovery timeframe?***

When I joined NA, I was still using ILDs, therefore I did share at NA meeting that I am still using (Clip 3, 04:31), where other members at NA meeting asked me reason of continuation ILDs where I told them that I am still craving (Clip 3, 04:43). On the other hand, sometimes I cannot understand, therefore, I use ILDs again.

I remember in last summer in July when it was extremely hot, I was changing my work, therefore I was free for a week and that week I start smoking joints again (Clip 2, 48:51). I remember those were last cigarettes, which I smoked on my roof under burning the sun (Clip 2, 49:03). However, after smoking those joints, I became more determine that these cigarettes are the last cigarettes of my life (Clip 2, 49:12). After that one day at a time, I stop smoking joints (Clip 2, 47:17). I seriously start working on NA steps, and one-step was to decide that today I would not do addiction (Clip 2, 49:39). In addition because of that step I start taking one step at a time that today I will do addiction but tomorrow and tomorrow I will repeat this again, that not today but tomorrow (Clip 2, 49:42). After 25 days or one month, I realised that I did not do any addiction that thought I am perfectly fine, nothing is wrong with me (Clip 2, 49:55). Furthermore, I tell myself that I can leave this addiction, I do not have any problem leaving this addiction and eventually, I stop thinking about addiction (Clip 2, 50:03).

- ***How often were you failing to control your behaviours?***

I was failing to control until I did not decide to leave my addiction for the last time. I decide this when I smoked my last joints before joining to another place of work.

- ***When fail to control your craving what was your choice of ILD?***

When I started to visit NA, I was thinking this is just drama and that time, my choice of ILDs was hashish when I failed to control my craving.

- ***What is your motivation to join NA's setup meeting?***

When I went to NA they told me that you must take part in 90 meetings (Clip 3, 14:13). If regularly for 90 meeting I will come, I will leave addiction (Clip 3, 14:25). By going to NA meetings, addict confidence level and will power becomes so strong which motivates him to must go to NA meeting

because when I go there I feel alive (Clip 3, 14:59). When I go to NA, my confidence level become so high when I see other recovered addictions and RAions that person A spent 10 years ILDs and has been 10 years for him to leave addiction, when I only use five years why I cannot touch 10 years clean same as him (Clip 3, 15:23).

Then comes recovery battles, e.g., this person has done 10 years and has used so much than I have, he read 10 chapters and I only read 5 still and still, he is strong in his recovery (Clip 3, 15:58).

- ***What are the some of the things, which motivate/force you to go to NA?***

NA meetings, NA recovery battles, increase of confidence level by visiting NA. Recovering addicts gave me advice by understanding my feeling which normal person cannot understand which is also hard for me to explain how RA explain things (Clip 3, 04:56). In addition, told me various ways to leave, the ways they adopt to leave their addiction (Clip 3, 05:16). Every individual method varies, and if ten people will tell me ten ways, in this case at least one will work on me (Clip 3, 05:35).

- ***Does sometimes you come across when you do not feel to go to NA anymore?***

No, it is not like that, but sometimes I missed meetings i.e., I am not going to NA meeting for last three weeks (May 3, 2017) because I am very busy, couldn't find time to go there lately (Clip 3, 20:57). Sometimes NA friends calls me and inquire the reason for not coming to the meetings (Clip 3, 21:15), Then I tell them I have some engagements, e.g., I was outside with family, since I am only free on Sunday and my wife made plans to visit some places or father made some plans when I will be free I will do XYZ works because everything has to manage (Clip 3, 21:40). No, I never thought that I am feeling good, and not using any ILDs because if I will think like that then will go back to addition (Clip 3, 21:58). It is because the confidence level I have, I go to meetings, it is only because I meet many people and I get motivate by going around them, even I get inspired that '20 years clean and what a successful life he is spending'(Clip 3, 22:16), and I also want to be like him (Clip 3, 22:18). In addition, if they are coming for 20 years, they are getting something from NA that is the only reason they are still coming (Clip 3, 22:23). This motivation comes in my mind and I do not want to finish this motivation by not going there (Clip 3, 22:30).

- ***After this swing of behaviour, how you keep your focus to attend the NA setup meeting?***

No, I never thought that I am feeling good, and not using any ILDs because if I will think like that then will go back to addition (Clip 3, 21:58). It is because the confidence level I have, I go to meetings, it is only because I meet many people and I get motivate by going around them, even I get inspired that '20 years clean and what a successful life he is spending'(Clip 3, 22:16), and I also want to be like him (Clip 3, 22:18).

- ***How did you control yourself not to use anything to satisfy your need during craving timeframe?***

When I shared my problems with NA RAs, someone suggested me when craving starts to take shower, other suggested me to go outside and sit with non-addict friends keep yourself busy in conversation, and someone suggested me that call some member from NA and keep yourself busy there (Clip 3, 05:35). They suggested me because these ways had worked for them and have shown commodity (Clip 3, 06:15). Even someone from NA meeting told me if you are craving for joints start smoking simple cigarettes (Clip 3, 06:41). Afterwards, when I tried all these methods on me one of them worked on me (Clip 3, 05:35) infect I think all of them worked on me (Clip 3, 06:58). If I had a mood swing or craving even current timeframe I am having mood swings and craving then I start smoking cigarettes, eat Paan or chew Gutka immediately, or I go out to play the game(Snooker) (Clip 3, 07:41) to keep myself busy or divert my attention. Furthermore, if during the job I have mood swings or cravings I use these methods but now I have a different type of craving, after a week or two (Clip 3, 07:56). By taking bath I also feel relax (Clip 3, 08:05). With the passage of time, I also invented my own methods like playing a mobile game, start listening songs, watching TV, go outside and go to play snooker (Clip 3, 09:40). Recovering addicts from NA only told me those methods which worked on them if they tried 100 methods and one worked on them so they shared me only that method because that method worked on them (Clip 3, 10:05). However, I also used my own 99 methods (Clip 3, 10:22). For example, if right now I will have mood swing then I will eat two Paan same time and that Paan will change my mood and fulfil the craving (Clip 3, 11:21). On the other hand, I will smoke cigarettes, and cigarettes will finishing my craving (Clip 3, 11:26). You can say Paan, Gutka and normal Cigarettes come in acceptable under nicotine category (Clip 3, 11:56). Furthermore, with the passage of time, there will be one stage/level when will not use anything to finish the craving (Clip 3, 17:27). There are so many people who started by using cigarettes, Paan, Snuff, to keep them safe from craving (Clip 3, 17:42). However, a time came where they left even these things (Clip 3, 17:45). There I met many such personalities who use this method and today do not use anything, that is mean if I also use them when I can leave much bigger things so these things which even normal person use, and when my willpower will be very strong, I will also leave these things as a normal person to leave these things (Clip 3, 18:47). OK for example, if you are an addict to normal simple cigarettes, will your body will suffer in the pain? Will you cut your body with blades? I think not so you cannot become that addiction which a person becomes using ILDs (Clip 3, 19:27). When want to leave these things then there are many alternatives available, e.g., I will eat bubble, will eat Supari (a betel nut) (Clip 3, 19:44).

- ***What NA offers you to start taking recovery process seriously?***

Literature, set-up meetings, true friends.

- ***What benefits had you after visiting recovery program?***

I made some good friends from NA to whom I can really call my friends (Clip 3, 22:57). Even I am suffering in craving at night 1 am, I call my first friend, if he is unable to pick the phone, then I will call second, third at least someone will pick my phone (Clip 3, 23:11). If any of them pick my call I will tell him I am in the bad condition in craving, he will come to me (Clip 3, 23:21). It does not matter if this person is the owner of biggest sweets franchise, general manager of the biggest hotel or very rich person, my worth front of them is nothing but on the spot, he will visit me to help me (Clip 3, 23:38).

Furthermore, if on 1 am I will call any normal person he will abuse me if will pick a phone (why calling on this time) so this is the biggest benefit of going there (Clip 3, 23:50). There I also learning about NA work, knowledge about God, getting good talk, increase in knowledge by going there (Clip 3, 24:14).

- ***What keeps you motivated to complete the recovery process?***

It is not about completing 90 meetings, 90 meetings are the starting point (Clip 3, 25:04). After going to 90 meetings motivations becomes so high that person rest of his life not only want to attend the meetings (Clip 3, 24:14) but also organise the meetings by himself to do correction/educate others (Clip 3, 24:20). Numbers of the meetings do not come to my mind (Clip 3, 27:11), NA recomand 90 meetings in order to have burning desire/motivation (Clip 3, 27:36). This is what we learn at NA because these are the roles to boost confidence level and will power (Clip 3, 28:08). No one is going to test NA platform but he is going to leave his addiction for the last time (Clip 3, 28:32).

- ***What are your plans for future after recovery?***

Now I finally thinking to settle down and recently got married and my new life has started which start after marriage now thinking about my own family (Clip 3, 29:40). My mind do not go anywhere else, now my attentions are all on this point that now I have a family and I want to do something for it e.g., secure my future, complete my study, make good money, good education to the kids and provide them good life (Clip 3, 30:19).

- ***Would you continue visiting NA after your recovery?***

I think after 90 meetings I would like to organise next coming 900 meetings (Clip 3, 27:53).

- ***Would u like to help other addicts to leave this bad habit after your recovery?***

After 90 meetings, I will think that I became a senior person of NA and now I want to do correction/educate other addicts who are in pain (Clip 3, 31:06).

- ***What are the most common activities you during the recovery timeframe?***

When I go to NA meeting, I meet my senior and junior person who are just like me (Clip 3, 31:02). I wait a whole week to meet with my friends, to tell them my activities of my whole week, including craving, family problems, if I have any other issue then I discuss with them (Clip 3, 31:22). I find the solution of my questions/problems (Clip 3, 31:27). I discuss my previous life (life during addiction), tell about my new present life, and also discuss my future life plans, spend time with others, and listen to them (Clip 3, 31:49).

- ***Do you feel some change in your social life after going to recovery program?***

Before my addiction life, my social life, the things, abilities and the maturity level which I did not have during my normal life today I have 100 times more (Clip 3, 32:38). During my addiction timeframe e.g., my values, my respect, abilities, my mind, maturity level, almost each and everything that I did lose is coming back many times more (Clip 3, 33:11).

- ***Do you feel that after completing your recovery you might start using ILDs again?***

With those addicts I used use ILDs and still are addicts, do not believe that I am lying, we could not leave addiction, and how I can leave addiction (Clip 3, 33:45). They still think that I am on very expansive and amazing ILDs and I do not want to share with them (Clip 3, 33:45). However my previous addict friends' talk do not affect me, even some normal person talk the same way I over-confidently tell them that before I was hashish addict and now I am on injections (Clip 3, 34:11)

- ***Would you like to add/share something more, which you forgot to mention or think I should also know that?***

I did try to motivate someone of my addict friends, but NA recovery does not allow interacting with any addict friends (Clip 3, 34:32). Because this counts so much in my life, if I meet any addict friend, my life can be destroyed, therefore, my recovery first, and in the end, another addict friend(s) comes (Clip 3, 34:54). But this level is at the end of the recovery, when NA member become so strong, and recovery is at least for 5 to 10 years, then if you would like to motivate the addict then you can visit him to give him invitation with precondition, and that is at least 3 people must go together (Clip 3, 35:23). This is a recovery step therefore; currently I am not working on that (Clip 3, 35:41). My recovery comes first and this is I am going to do on the last when my recovery will become very strong when I will feel that I am worth to show some addiction a recovery path, the same way NA senior members do (Clip 3, 36:02).

12.3.3.3. Video game

- ***Are you fond of video games?***

Yes, I do play video games (Clip 3, 39:00).

- ***On what type of technology do you prefer to play the game?***

I play games on my mobile phone (Clip 3, 39:18). Only play on mobile, not on other devices e.g., play station, Xbox (Clip 3, 39:24).

- ***When do you like to play the game?***

When I am a little bit free, not working and want to keep myself busy then I play the game for a while (Clip 3, 39:47). Not necessarily if I feeling bad, even in normal condition I play the game (Clip 3, 40:02).

- *On which special moments, you like to play the game?*

I didn't make the game as my activity as told you before that I start watching TV, take shower, go outside, but when I feel little free, or feel bored then I play the game (Clip 3, 40:11).

- *Do you feel some difference in your behaviour before and after playing the game?*

Subway Surfers and Angry Birds I like to play (Clip 3, 41:42). Currently, I have only these two games so I only play these two games (Clip 3, 41:50). Sometimes I switch between these two games, or sometimes e.g., I am playing Subway Surfers and will switch to the Angry Birds (Clip 3, 42:06).

- *What motivates you to play the game?*

Basically, I play the game for entertainment, a little bit when I am sitting at the office and at home (Clip 3, 41:17).

- *How long do you play?*

I only play 15 to 20 minutes; I am not a game addict (Clip 3, 42:37).

- *When you plays any game, do you feel that it has some effect on you?*

I enjoy and feel entertained when I play the game on my mobile phone (Clip 3, 42:58).

- *What are the elements in the game you like the most?*

In the Angry Birds game, I like birds, in Subway Surfers I like coins and when the policeman catches the surfer (Clip 3, 43:30).

- *Why do you like those elements?*

I like catching the coins, to make the higher score, just an entertainment that I catch these many coins (Clip 3, 43:44). I made these many coins and I have a high score (Clip 3, 44:03). It is not as if I want to show someone my score just for entertainment because I found a little time, I take my mobile and play the game (Clip 3, 44:39).

- *What elements you hate in the game and why?*

I can only say about what I like.

- *What are your thoughts about playing the same game online game?*

I live in the main city, do not have much time to spend on playing an online game, but I think it is a good idea for those who comes each Sunday from a far distance, like Gujranwala, Rawalpindi, Gujrat (Clip 3, 45:41). If can provide them such a platform then it really better (Clip 3, 45:48). This is an innovation in my opinion (Clip 3, 45:51).

- ***With who would you like to play the game?***

Recovered and with RA, NA friends instead of meeting them two, three times I can meet them in the game especially who come from a far distance (Clip 3, 45:40).

- ***Would you like to play online with others?***

I think those people who are coming from a far distance it could be a good point of view (Clip 3, 46:43). These people will find facilities, in shape of a platform that is modern, unique in my opinion it is very better (Clip 3, 47:06).

- ***Would you like to reveal your real identity to the players?***

Keeping my real identity secret is better (Clip 3, 47:27). It is true that when I go to NA I tell them almost everything about me, however, it is NA principle that whatever happened in NA, all members should keep it secret (Clip 3, 47:46).

- ***Why would you prefer to keep your identity secret when you share everything during start up meetings?***

NA is such a platform which works regardless of any benefits, every member work for themselves which automatically leave influence to others (Clip 3, 48:20). Therefore, it is better to keep it the real identity secret. (Clip 3, 48:21). It is the difference between meeting physically and discuss things there and discusses things on a mobile phone because you near know that who is reading my messages (Clip 3, 48:55).

- ***Do you think by playing you can learn from others?***

If there are NA and other literature then really will help to learn many things (Clip 3, 49:27).

- ***In order to help your recovery, what elements a game should contain?***

A proper platform, which will require the presence of NA members then I think it could work further. (Clip 3, 46:31).

- ***If I request you to suggest a game theme, how will you describe it?***

The game could have the quizzes, e.g., our literature quiz, that we have to read literature if cannot read then other people tell us about literature (Clip 3, 50:03). If literature could come in shape of quiz then it will really contribute recovery (Clip 3, 50:04).

- ***How do you see a game to contribute in your recovery process?***

The mobile game could really contribute recovery (Clip 3, 50:04). Furthermore, RA will take more interest and work more on his recovery (Clip 3, 50:11). The person could enjoy also game and if the person will become an addict of that game because in NA there are also many game addicts, therefore, I think it is very better (Clip 3, 51:09). If they will come into this addiction it will prove very healthy for them to make their recovery strong (Clip 3, 51:33).

- ***Would you like to add/share something more, which you forgot to mention or think I should also know that?***

Some people especially new RAs are just like that, they play the game during meetings. My knowledge about the game are very limited but I think it will be possible to read literature, play the quizzes with RAs, recovered and with the NA members then it will benefit a lot (Clip 3, 52:03).

12.4. ILDs in Pakistan

Pakistan has an estimated current population of 193,919,105, which is the equivalent of 2.57% of the total world population (Worldometers, 2016). Furthermore, Pakistan is the sixth largest country by population. Pakistan is located in South Asia, bordered with China Northeast, India in the East, Afghanistan and Iran in the West as well as the Arabian Sea in the South (Youth Pakistan - Drugs Addiction & the Youth, (n.d.)). The youth of Pakistan, (median age 22.7 years) makes 35% of its total population (Worldometers, 2016). Since the United States invaded Afghanistan after the September 11 attacks and due to displacement and political, geographical, and economic dynamics, Pakistan and its people have been directly affected. Within less than a decade, Pakistan not only started to suffer because of the growth in fanatics and extremism, but ILDs Lords also found a safe haven in Pakistan. The spread of ILDs and ILD addiction among Pakistani youth has skyrocketed since then. The people of Pakistan have not only witnessed the number of ILD users increasing gradually but have also recognised that the youth of Pakistan is a direct target for such activities. According to the Pakistani ILDs, related officials and UN collaborative research aged 25 to 39 than 15 to 24 used the most of the ILDs,

12.5. Mobiles phones in Pakistan

According to Pakistan Telecommunication Authority total register, mobile sim cards are 114.7 million (Mobile Phone Users in Pakistan Slashed to 114 Million, n.d.). However, according to Pakistan Advertisers Society, 60% people in Pakistan use more than one cell phone (Smart Phone Usage in Pakistan [Infographics] | Pakistan, n.d.) Furthermore, 53% of the people have two mobiles. Moreover, 72% of people in Pakistan have smartphones as their primary choice, and among smartphone users, 68% are on Android, 24% use iPhone and only 8% use windows mobile. Furthermore, 77 % smartphone users are aged 21 to 30 and only 12% of smartphone users are aged 31 to 40 years old (Smart Phone Usage in Pakistan [Infographics] | Pakistan, n.d.).

12.6. Narcotics Anonymous

NA is a non-profit organization that was founded in 1953. Because of NA voluntary program, the exact number of NA members is not available, but one thing can be said for certain, namely NA attracts a diverse membership, therefore, is rapidly growing. NA is operating in over 130 countries, conducting

around 46,308 meetings in over 65 languages (NA Annual Reports 2016, n.d.), where 42% of the total number of members are women.

12.6.1. NA MEETINGS:

During the meeting, RAs meet regularly to help one another to stay clean. NA offers twelve key steps that are the basis of the recovery program. Since people have different reasons to attend meetings, NA meeting provides them a place where they can share their stories, recovery with other RAs' members. NA meetings do not concern the amount of illicit drugs, the type of illicit drugs, but focus on sharing personal experience with recovered and RAs who have faced

similar situations; the members avoid crosstalk and keep each other's anonymity. Everyone is welcome to NA, regardless of religion, colour of the skin, economical status, and ethnic background, a member still using illicit drugs or a new member with a smile, a handshake, NA buttons and badges, hugs, additional celebration of the members' birthday or recovery anniversary.

There are two types of meetings, a speaking meeting that allows a member to share his thoughts for an extended period of time, and a discussing meeting allowing a member to take turns sharing. In both types, members are welcome to take breaks, use the rest room, or even smoke. It is worth mentioning, NA discourages disturbing behaviours, hate speech, threats and NA treasurers/trusted servants will take action. NA also offers an open meeting that also welcomes non-addicts, friends and family every first week of the month. However, for addicts, NA suggests they should attend 90 meetings so as to know NA members, NA programme (Sanders, 2014). A programme, NA official literature is also a unique source of information, such as Narcotics Anonymous well-known blue book, considered to be a great start. For addicts, RAs or even for non-addicts, NA offers a range of literature that is available online free of costs. NA sponsorship is a vital tool considered a higher power as an experienced member, who shares personal experience, offers guidance and twelve steps support. However, trust servants are those who have a service position in NA, any sponsor could also be a trusted servant of NA.

12.6.2. NA TRADITIONS:

1. Our common welfare should come first; personal recovery depends on NA unity.
2. For our group purpose there is but one ultimate authority—a loving God as He may express Himself in our group conscience. Our leaders are but trusted servants; they do not govern.
3. The only requirement for membership is a desire to stop using.
4. Each group should be autonomous except in matters affecting other groups or NA as a whole.

5. Each group has but one primary purpose—to carry the message to the addict who still suffers.
6. An NA group ought never endorse, finance, or lend the NA name to any related facility or outside enterprise, lest problems of money, property, or prestige divert us from our primary purpose.
7. Every NA group ought to be fully self-supporting, declining outside contributions.
8. Narcotics Anonymous should remain forever nonprofessional, but our service centers may employ special workers.
9. NA, as such, ought never be organized, but we may create service boards or committees directly responsible to those they serve.
10. Narcotics Anonymous has no opinion on outside issues; hence the NA name ought never be drawn into public controversy.
11. Our public relations policy is based on attraction rather than promotion; we need always maintain personal anonymity at the level of press, radio, and films.
12. Anonymity is the spiritual foundation of all our traditions, ever reminding us to place principles before personalities.

(Narcotics Anonymous, 2008, pp. 60 - 61)

12.6.3. NA KEY STEPS

1. We admitted that we were powerless over our addiction, that our lives had become unmanageable.
2. We came to believe that a Power greater than ourselves could restore us to sanity.
3. We made a decision to turn our will and our lives over to the care of God, as we understood Him.
4. We made a searching and fearless moral inventory of ourselves.
5. We admitted to God, to ourselves, and to another human being the exact nature of our wrongs.
6. We were entirely ready to have God remove all these defects of character.
7. We humbly asked Him to remove our shortcomings.
8. We made a list of all persons we had harmed, and became willing to make amends to them all.
9. We made direct amends to such people wherever possible, except when to do so would injure them or others.
10. We continued to take personal inventory and when we were wrong promptly admitted it.
11. We sought through prayer and meditation to improve our conscious contact with God, as we understood Him, praying only for knowledge of His will for us and the power to carry that out.

12. Having had a spiritual awakening as a result of these steps, we tried to carry this message to addicts, and to practice these principles in all our affairs.

(Narcotics Anonymous, 2008, p. 17)

12.7. Design Heuristics

A heuristic is a general design principles or rule of thumb to evaluate the decision that is already been made and to direct the design. Heuristics also knowns as the golden rules of design that are flexible and comparatively inexpensive method to perform on a design specifications to useful for early stage design. However, heuristics also can be used on prototype (Dix, Finlay, Abowd, & Beale, 2004). It is worth to mention that heuristics can be even used on fully functioning game however because of set limitation for this study will not bring into account further. Nielsen ten heuristics (Nielsen, 1993) are used as the guideline to support the evaluators (see Section 8.2: Development of the first prototype) to discovering usability problems.

Nielsen's ten heuristics are mentioned below:

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency
- Aesthetic and minimalist design
- Help users recognise, diagnose and recover from errors
- Help and documentation

(Dix, et al., 2004, pp. 325-326)

During the first iteration of the prototype (see Section 8.2.1: First prototype), design heuristics will be used as a guideline. Moreover, all the elements will be evaluated separately and their problems will be collected and calculated by the severity rating and the most important receive attention first.

12.7.1. DESIGN RULES

Nielsen's ten heuristic been chosen to indicate certain rules of design which will indeed be useful during the design process. Mechanisms that are provided by abstract design rules are the most affecting the most if they are assume in earlier such as in the requirements specification.

These principles were divided into three main categories as guided in Dix et al., (2004) book:

1. Learnability is aim to ensure effective interaction and achieve the best performance by the new user (Dix et al., 2004). Under the learnability category, it is worth to mention abstract of principle i.e., *predictability*, *Synthesizability*, *Familiarity* and *Generalizability* (Dix et al., 2004).
 - a. *Predictability* is a user-centered concept. Predictability which focuses on the users to regulate based on their past interaction history, how to interact with the mobile game (Dix et al., 2004).
 - b. *Synthesizability* focuses on user ability to judge the effect of past operation and see the changes immediately (Dix et al., 2004).
 - c. *Familiarity* focuses on how the user can identify how to initiate any interact with a mobile game. User vast experience of operating other mobile game/system/app familiarity also guide how to interact with a mobile game and first impression of the mobile game (Dix et al., 2004).
 - d. *Generalizability* provide guidance to the complete analytical model of the mobile game for the user. Generalizability also supports the activity of extending specific interaction knowledge to the new situations (Dix et al., 2004).
 - e. *Consistency* is the extensive principle of users' interaction design, which related to the likeness in input expression or output responses likeness in behaviour arising from similar task purposes (Dix, Finlay, & Beale, 2004, p. 261).
2. Flexibility refers to many different ways that user and the mobile game exchange information (Dix et al., 2004). Under the flexibility interaction category is worth to consider; dialogue initiative, multi-threading, task migratability, Substitutivity, and customizability.
 - a. In *dialogues initiative*, the mobile game has, an edge to initiate all dialogue where the user simply responds to the information is requested.
 - b. *Multi-threading* always supports interaction communication with more than one task at a time simultaneously.
 - c. *Task migratability* pass responsibility for task execution between the mobile game and the user e.g., spell checking.
 - d. *Substitutivity* allows values of input and output corresponding to substitute for each other and allow the user to choose what suits the needs of the moment.
 - e. *Customizability* concerns with modifiability or customization of the interface by the user or the mobile game.
3. Robustness concerns with the level of support provided to the user successfully achievement and assessment of goals. (Dix et al., 2004, p. 260). Under the robustness interaction category is worth to consider; *Observability*, *Recoverability*, *Responsiveness*, and *Task conformance*.
 - a. *Observability* allows the user to compare the internal state of the mobile game from its recognisable representation on the user interface.
 - b. *Recoverability* is the ability to the user to intended goal after recognition of some error in a previous interaction. Recoverability avoids blocking the user and provides the ability to recover.

- c. *Responsiveness* measures the response time of interaction between the user and the mobile game.
- d. *Task conformance* address the purpose task adequacy, which allows the user to perform the various task in achieving certain goals within the application premises.

From the initial development phase, these rules of thumb will provided a clear approach, how the user might interact with the mobile game. These design rules and design heuristics will be used throughout the development while developing the prototype that could be found description of designed prototype (see Section 8.2.1: First prototype).

12.8. Search Strategy

In this section, I will describe the plan for the literature search; the strings I believe will provide the results and the electronic database I am planning to use.

What:

How a game should be designed to change addicts' behaviour, health promotion, motivate to healthy activities in order to support recovery process and build a community to support one another.

How:

- What reasons push a rehab person to try ILDs again?
- Which bad habits are the addicts more likely adopt to satisfy during the craving timeframe?
- Which elements are required in order to build a game to motivate addicts to health promotion and engage in its environment in order to change their behaviour during the craving timeframe?

Where:

In order to get the best research results, the search strategy is a combination of different methods. My first choice of the electronic database is Alborg University's Library database (University Library, n.d.). Being a student of Alborg University, the University database gives access to thousands of digital articles, Journals, Reports, Conference Proceedings and eBooks to read and download cost free.

In the review, the electronic database search terms include relevant to the topic, e.g., mobile game, and change in behaviour, Digital game-based learning, and mobile game impact. Electronic database search engines are AUB (Aalborg University Library) that is embedded with other most famous index to find educational-related literature e.g., ERIC - ProQuest (Educational Resources Information Center), AsiaPortal, EBSCOhost, IEEE (Institute of Electrical and Electronics Engineers) Computer Society Digital Library by using AAU access control (student's official AAU email address and password).

Furthermore, in order to find a more precise material for the topic Boolean expressions ‘OR’ ‘AND’ if needed ‘NOT’ operators been used. I identified the studies of the interest from 2000 until 2016 (up to December 30, 2016) and only in the English language. By refining my search, I got more specific search results. Moreover, Google scholar has been used, since related to topic Pakistani content, related to topic NGOs data and their reports lakes on an electronic database (as mention above). Furthermore, Google Scholar has also been used if the desired permission for the article was not granted on this electronic database (mentioned above).

In order to have more refined and customised results on Google scholars, phrase searching operator has been used (i.e., double quotes " "). Double quotes allows to search for documents containing the exact phrase, wildcards (the asterisk *) which acts as a placeholder for any unidentified terms (e.g., behavi*), very useful in terms of combining with phrase searching, and ‘Pearl growing’ (Snowballing) uses one seed (Keyword, Authors, Citations) information item, being used thoroughly to perform search for literature on Google scholars.

Search Terms:

As an example, the search terms I used for games as mentioned below. Terms contains combined terms, that games player might have played for possible outcomes, effects, impact, learning, education, “change in behaviour”, “emotional support”, “reduce anxiety”

(“Game” OR “Computer Games” OR “Mobile Games” OR “Video Games” OR “Game-based” OR “Electronic Games” OR “Digital Game-based”)

Terms for games’ effects/outcomes were considered to use terms for impact and outcomes such as education, effects, learning, “change in behaviour”, motivation, engagement, “emotional support”, “reduce anxiety”:

AND (“outcomes” OR “Impact” OR “effects” OR “behaviour” OR “engagement” OR “education” OR “affect” OR “motivation” OR “M-Learning” OR “learning” OR “Health education” OR “Physical Education” OR “Educational tool” OR “habits” OR “emotional support” OR “reduce anxiety”).

12.9. Timeline & protocol

During the creation of the synopsis, the first phase had already started where I read literature related to ILDs, some survey that has been done in Pakistan to draw a clearer picture of the problem I intended to provide support. Since material about Pakistan was not sufficient, I also read literature about neighbouring countries, e.g., India, Nepal, Bangladesh because these countries also share the same culture and social patterns. Related work, identified areas that helped me to in this entire study, e.g., health-related games, mobile games effect, including choice of methods they used. Furthermore, a complete description of the search strategy can be found in the '*section 12.8*' (see Section 12.8 Search Strategy).

Based on the knowledge I gained by reviewing the literature and national reports, I conducted the Semi-structured interview with the ILDs addicts (Bryman, 2012). A set of predefined questions (see Section 7.1.4.1: Interview Guideline) provides essential help to gain fruitful information, i.e., reasoning/motivation when and how much quantity they used ILDs, how/when they realised they became addicts, and when they motivated or who forced them to quit the addiction. In addition, how what method they used to rehab and what symptoms they had and how they controlled their symptoms during recovery timeframe, and what tools they are using to be strong in their recovery. Three interviews allow me to answer R1 and R2 of this study.

However, in order to answer R3, I choose CD method, therefore; I traveled to Pakistan at the end of May 2017. After arrival, I participated in two recovery meetings that allow me to verify some knowledge I gained through interview, e.g., what exactly unconditional love, multiple problems sharing and how RA get their solutions, what is core reason that motivate RAs to go to meeting or even what dishearten some to relapse and become addict again.

CD took place at NA office, Abrar centre (Lahore). Decision has been made to do CD at NA office because of location's familiarity among participants. However, because of extremely hot weather, and month of Ramadan, only two people agreed to take in CD. To begin CD, I introduce both participants, to the study and what I am aiming to develop, and how they can provide their empirical knowledge that can contribute to the tool development. During the brainstorming, we developed multiple fruitful requirements for the game that was clustered and refined in a light literature review on multiple stages before finalising the core requirements. After requirements development, designing of first iteration begin where collaboration with other participants design multiple design themes that were highly inspired by literature review ((Chiu, et al., 2014), (Read & Shortell, 2011), (Grimes, et al., 2010), (Consolvo, et al., 2008), (Jafarinaimi, et al., 2005)). After brainstorming the theme, we did develop our first iteration for the

mobile game that is not only simple but also facilitates almost all '*must to have*' requirements. During the first iteration of the prototype, I made sure that Nielsen (1993), usability heuristics were utilised (see Appendix, Section 12.7: Design Heuristics). It may seem like took a lot of time to co/design the game but it is worth mentioning that some of the requirements were never could have thought alone and been lacking in literature e.g., what is importance of keeping chat history, self-righteous during meeting or other helpful insights that were only possible for their personal empirical experiences.

Because of limited timeframe and CD limitations, it was not possible to do a usability test. Therefore, before travelling back, single usability test will be done where I will ask participants predefined questions about design and to perform few tasks. The results might show little or no change but it needs to analyse that will give leeway to gain recommendations for the second iteration. Furthermore, usability test results and second iteration will present during the thesis defence.



Figure 49: Time Plan for the project

12.10. *Budget*

While living in the developed city, I found multiple channels in the same city; however, only one NGO (Narcotic Anonyms) agreed to give access. Furthermore, an incentive not more than 500, 00 DKK each as a token of appreciation were offered to the organisation (Goodman, Kuniavsky, & Moed, 2012). 600, 00 DKK were spent as an entertainment allowance (Juice, Ice cream and Tea etc.). It is worth mentioning this study did require me to travel to Pakistan. It is worth mentioning, because of my supervisor's (Lone Dirckinck-Holmfeld) efforts, *'The Study Board for Communication and Digital Media'* did grant me DKK 3680.00 DKK as my travelling costs. However, the ticket was bought for the cheapest with 42 hours flight-time in total for around 45 days before that cost me 4600, 00 DKK.

Since my family lives in Pakistan, accommodation is included in expenses, however, I also generated 15,000, 00 DKK to stay in Pakistan for one month and support the additional expenses by my own. I already own a laptop and a mobile phone (alongside built-in microphone in both devices), the prototype will be developed on paper, pen, and the reproduction will be on vector graphics editor software e.g., Adobe Illustrator, which will not take any additional cost since I already owned it.