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College Students, Experiences on Smart Phone Technology Usage: A Qualitative Content Analysis Study

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Abstract

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Keywords

Information Technology, Smart Phones, Students' Experiences, Qualitative Content Analysis

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College Students' Experiences on Smart Phone Technology Usage: A Qualitative Content Analysis Study

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Besides many benefits of the cell phone technology, numerous arguments are raised on the different and important negative effects of such a technology. This qualitative content analysis study explored the common usages of smart phone technology, its challenges, and benefits among Iranian college students. Participants were 32 bachelor degree students who were recruited using purposive sampling method with maximum variation. Data were collected through 11 individual semi-structured interviews and 3 focus group discussions (5-8 students in each group). Data analysis was done based on a conventional content analysis approach. Data analysis resulted in 3 main themes and 12 sub-themes. The main themes included "Easy life" (achieving information, handling school affairs, easy communication, and cheap communication); "Spending time" (virtual friendship, participation in various social networks, computer games, watching movies and cartoons, and reading stories and novels); and "The experience of challenges" (physical problems, psychosocial stress, and mood and behavioral problems). Based on the students' experiences about the smart phones technology usage, authorities, cultural institutions, and educational policy makers should encourage culture development using education through media and education during the early childhood and before using any software. Keywords: Information Technology, Smart Phones, Students' Experiences, Qualitative Content Analysis

In the present era, the information and communication technologies have become essential tools in the individual's life (Moghadas, Lahsaeizadeh, & Ghafarinasab, 2008; Velayati, 2015). During the last 10 years, the number and types of mass communication tools have developed quickly. The cell phone, as one of the most extensive mass communication tools in the field of communication technologies, has been affected by such a progress. In comparison with the past, the current generation of children, adolescents, and young people have access to the different types of mass communication tools such as cell phones, computers, video games, and the internet (Baysal, Sahenk, & Hazneci, 2010). Young people are mainly influenced significantly by the new communication and information technology. The incorporation of the cell phone into young people's lives in recent years has become a global phenomenon and is transformed from a technology tool to a social media (Rajeev & Jobilal, 2015). In a quantitative study on college students of two colleges of the University of Perpetual Help-Calamba, 85% smartphone student-users borders between super users to mobile addict (Alson & Misagal, 2016). Based on findings of a qualitative study conducted on medical students, cell phones, PDAs, and computer-smart phones were mentioned most frequently for web-searching, individual information management, communications, job affairs, and other medical programs (Tahamtan, Sedghi, Talacci, & Mohaghegh, 2012). Also, in another quantitative study conducted with Australian and Malaysian students, the most common reasons for the use of the cell phone were an easy communication with others via messaging and voice calling, and having no time and place limitations. In this regard, the American

students considered the cell phone essential for calling parents, asking them for guidance and achieving emotional support (North, Johnston, & Ophoff, 2014).

Along with the growing trend of using cell phones in other countries, the growing number of users of this technology in Iran has created a revolution in the use of communication tools and a change in the pattern of relationships and behaviours (Saeidi, 2013). The cell phone as the most personal and the most widely used communication device with its variety of functions and applications in various domains is an important tool for developing the Iranian society (Moidfar & Ganji, 2010).

Besides the growing use of this technology, numerous arguments are raised about the individualistic and social, short-term and long-term, superficial and deep, and positive and negative effects of such a technology (Baysal et al., 2010; Hasanzadeh, Lotfi, Hoseini, & Ebrahimi, 2012; Hasanzadeh & Rezaei, 2010; Moidfar & Ganji, 2010; Rajeev & Jobilal, 2015; Saeidi, 2013). The advantages of cell phones are making voice calls, text messaging, live chat, music play, video games, internet and telephone banking services, and the facilitation of communication (Baysal et al., 2010). Besides the benefits of this miracle, its negative effects include headache, memory loss, fatigue, the feeling of heat in ears, sleep disturbances, reduced attention and concentration, cancer (Ghaedi, Kargar Jahromi, Farzam, Azhdari, Mahmoudi Teimourabad, & Bathaee, 2013), anxiety, depression, psychological distress, unhealthy lifestyle, hearing and vision problems, brain tumors, reduction in social relationships and well-being due to loneliness, depression, and isolation (Babadi-Akashe, Zamani, Abedini, Akbari, & Hedayati, 2014), lower educational attainments, dependence, addiction, and emotional stress (North, et al., 2014). The findings of a descriptive study conducted by Rajeev & Jobilal (2015) showed that the mobile phone technology especially among college students had a high level of acceptance and penetration. Meanwhile, the negative impact of mobile phones and other associated supplies was very high. The results from an applied research survey done for the purposes of investigating the behavior of mobile phone addicts and the mental health of university students of Shahrekord, Iran, showed six categories of mobile phone addictive behaviors with the majority of students placed in the three categories of habitual behaviors (21.49%), voluntary behaviors (21.49%), and dependent behaviors (21.49%) (Babadi-Akashe et al., 2014). Based on Atadokht's (2016) descriptive-correlational study on the relationship between students' cell phone overuse and their sleep habits and sleep disorders, results showed that the most common sleep problems were disability in sleep, cell phone overuse, and daily dysfunction. These results showed the necessity of more attention of health professionals towards preventing the adverse effects of cell phone overuse and promotion of students' biopsychosocial health.

A review of the literature shows that many quantitative studies have been conducted on the tangible and physical effects of cell phones on individuals' health and their patterns of use in Iran and other countries (Atadokht, 2016; Babadi-Akashe et al., 2014; Baysal et al., 2010; North et al., 2014; Rajeev & Jobilal, 2015; Saeidi, 2013). The related literature review persuaded us to design this present study to help with understanding the unique, in-depth, rich, and individualistic lived experiences of college students based on Iranian culture, values, and belief systems with regard to this social phenomenon. The description, explanation, and interpretation of students' experiences using a qualitative design helps us understand the size and scope of its use and pathological aspects of this phenomenon. In addition, we will be able to detect students' problems, expectations, and their actual needs, and steps for improving their life style, quality of life, and educate the whole society. Therefore, the aim of this qualitative study was to explore college students' experiences of the use of the smart phone.

Author Note

The researchers involved in this study were F. Jafarzadeh-kenarsari and P. Pourghane. F. Jafarzadeh-kenarsari's areas of research include medical education, qualitative studies, and reproductive health. P. Pourghane's areas of research include medical education, cardiac rehabilitation, and qualitative studies. Both researchers teach undergraduate and postgraduate-level courses at the Faculty of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran. Researchers' daily observations about the increasing usage of smart phone among college students, especially undergraduate students and awareness of its possible risks, persuaded them to design and perform this qualitative study. We wanted to explore college students' experiences about common usages of smart phone technology and its daily life benefits and harms. In accordance with the main objective of the present study and the limitation of existing theory or related qualitative studies in regard to phenomenon under study, especially in an Iranian social and cultural context, we used inductive conventional qualitative content analysis, so that, we can obtain deeper and rich understanding about the issue under study. Also, we would be able to detect students' problems, expectations, and their actual needs and if necessary, plan to educate students and the whole society for improving their life styles. F. Jafarzadeh-kenarsari and P. Pourghane were responsible for the study conception and design. We both performed the data collection and data analysis. Also, both researchers were responsible for the drafting of the manuscript and making critical revisions to the paper for important intellectual content. We declare no conflict of interest in this study.

Methods

Design

We conducted a qualitative study using a conventional content analysis with the aim of exploring college students' experiences of the use of the cell phone in the years 2016-2017. The main questions of this study were:

- a) What are your common usages of smartphones?
- b) Please explain about the possible benefits and advantages that you experienced in this regard.
- c) Would you please explain about the possible problems and challenges that you experienced in this regard?

Content analysis is a research method that has come into broad use in health studies in recent years and also it is a flexible method for analyzing text data (Hsieh & Shannon, 2005). Qualitative content analysis is the analysis of the content of narrative data to recognize eminent themes and patterns among the themes (Polit & Beck, 2012). Rather than being a single method, current applications of content analysis show three different approaches: conventional, directed, or summative. All three approaches are used to interpret meaning from the content of text data and, therefore, connect to the naturalistic paradigm. The main differences among these approaches are coding schemes, sources of codes, and threats to rigor. In conventional content analysis, coding categories are extracted directly from the text data. Conventional content analysis is commonly used with a study design for which the aim is to describe a phenomenon, in this case the college students' experiences about smart phone usage. The benefit of the conventional content analysis approach is gaining direct information from study participants without procrustean preconceived categories or theoretical perspectives (Hsieh & Shannon, 2005). Considering the main objective of the present study and the limitation of existing theory

or related qualitative studies in regard to the phenomenon under study, especially in an Iranian social and cultural context, we used inductive conventional qualitative content analysis to explore the qualitative data with regard to research questions. Researchers immersed themselves in the data to permit new insights to emerge.

Participants

The research environment was the faculty of nursing, midwifery, and allied medical sciences affiliated with a university located in the northern of Iran. The participants were 32 bachelor degree students who were in our classes. The age range was between 18-25 years. The mean age of the participants was 21.5 years. They were mostly female (23 people). The students were studying in the fields of midwifery (6 people), nursing (6 people), laboratory sciences (7 people), operation room technician (4 people), anaesthesiology (4 people), and radiology (5 people). They were all single. Using a purposive sampling method, all probable participants who were willing to take part in this study were recruited. The maximum variation in sampling in terms of gender, educational discipline (nursing, midwifery, and allied medical sciences) and educational degree were considered. By selecting study participants with diverse perspectives and experiences, researchers can achieve rich data (Polit & Beck, 2012). The criteria for the selection of the participants were their willingness to take part in this research and share their experiences. A research notice was electronically posted on the website of faculty of nursing, midwifery and allied medical sciences for one week. In this announcement the researchers asked their female and male undergraduate volunteers in different educational discipline (nursing, midwifery, and allied medical sciences) and educational degree to refer to the research committee for contributing to the study. Appointments were made as per participants' preferences (in different times or places).

Data Collection

Both individual and group semi-structured interviews were conducted for data collection by both researchers. This technique ensures that researchers will achieve all the information required, and it encourages participants to talk freely, and to tell stories in their own words (Polit & Beck, 2012). In this respect, 11 sessions of face-to-face interviews in a quiet place with an average length of 25-55 minutes were held. The group interviews were conducted based on the students' preferences in 3 sessions with the participation of 5-8 students in each group. The students participating in the group interviews were not the same ones who were individually interviewed, but they were the students who preferred this type of interview for ease of sharing their experiences. The focus of the interviews was sharing experiences of the use of the cell phone. All questions that were asked during individual and group interviews were guided by the main study questions as mentioned before. Also, probing questions such as "Can you mention some more examples?" or "What does that mean?" were asked to improve the depth of data collection and follow the participants' thoughts.

All the interviews were tape-recorded and transcribed verbatim by the two researchers. The data collection and analysis were concurrent and continued until data saturation was reached, that is as the collected data did not add depth and variation to our findings. Data saturation was the guide for the number of interviews required to find the answer to the study's question (Polit & Beck, 2012). In the present study, data saturation was occurred by interviewing 30 students and researchers continued interviews with 2 other participants in order to ensure the data saturation.

Data Analysis

The data collection and analysis were concurrent. The method suggested by Graneheim and Lundman (2004) was used for data analysis as described below:

- The interviews were transcribed verbatim and read several times to achieve the sense of whole;
- All the interviews were considered the unit of analysis;
- Paragraphs, sentences, and words with related meanings and contents were considered meaning units that were condensed. Therefore, they were put together given similarities in their contents and conclusions;
- According to their underlying meanings, they were brought to a level of abstraction and conceptualization, and were labelled with codes;
- In the view of their similarities and differences they were compared together, abstracted, and classified into categories (sub-themes);
- The categories were compared together and the latent content as themes was developed. In Table 1, we provide examples of meaning units, condensed meaning units, codes, sub-themes, and a theme from our content analysis of text data.

The data analysis ultimately led to the development of 3 themes and 12 sub-themes (see Table 2) as follows:

- Easy life with four subthemes;
- Spending time with five subthemes;
- The experience of challenges with three subthemes

Table 1: Examples of meaning units, condensed meaning units, codes, sub-themes, and a theme from content analysis of text data

| Meaning unit | Condensed meaning unit | Code | Sub-theme | Theme |
|--|--|---|-------------------------|-----------|
| The cell phone is a good technology. It provides us with scientific and information channels that are useful for improving our personal information. | Providing scientific and Information channels for improving individual information | Information exchange | Achieving information | Easy Life |
| Every time I encounter any questions, I find the answer swiftly via my cell phone | Finding the answer of every question swiftly via my cell phone | Quick access to information | | |
| When I have a question about the classroom's lesson plan, I share my question to my classmates via the online group and get the results | Sharing questions with the classmates through the online group and get the results | Educational Affairs | Handling school affairs | |
| I am hundreds of kilometres away from my family and do not see them for months. I resolve my problem via | Phone communication and send messages to friends and family members from a distance. | Keeping in contact with others regardless of location | Easy communication | |

| | | | | |
|--|--|----------------------------------|---------------------|--|
| the phone communication and send messages to friends and family members. | | | | |
| Using the smart phone, I can make connections to the internet and other social networks such as Viber, Imo, and so on, and also audio and visual communication with friends and family are so cheap. | Cheap audio and visual communication with friends and family by using the virtual social networks. | Inexpensive social communication | Cheap communication | |

Table2: Main themes and subthemes were extracted from analyzing of students' experiences on the Smart Phones Technology Usage

| Main themes | Subthemes |
|------------------------------|--|
| Easy Life | Achieving information Handling school affairs Easy communication Cheap communication |
| Spending time | Virtual friendship Participation in various social networks Computer games Watching movies & cartoons Reading stories and novels |
| The experience of challenges | Physical problems Psychosocial stress Mood and behavioral problems |

Rigor

The criteria stated by Guba and Lincoln (1985; as cited in Polit & Beck, 2012 and Strubert, Alen, & Carpenter, 2003) were used to ensure rigor in this study. In this regard, credibility, dependability, transferability, and confirmability were considered. The credibility of this research was determined through spending sufficient time for data collection and analysis (3 months), using a sampling method with maximum variation (selecting participants among different undergraduate nursing, midwifery, and allied medical sciences students; male and female students; and studying in different academic semesters) and member checking by some participants (getting feedback from participants (in this regard, a few extracted codes were confirmed based on the participants' opinions). Following the steps of data collection and analysis for qualitative content analysis, peer checking (three of our expert faculty colleagues who were familiar with qualitative research analysed and rechecked the handwritten text data) helped with the determination of dependability. Also, the supervision of the study process by our academic faculty members who were expert in the field of qualitative research enhanced the confirmability of our study. Lastly, transferability of this research was approved through

the provision of a detailed description of the study process (in the section of methodology and data analysis) for the application of our findings by other researchers.

Ethical Considerations

The research council affiliated with Guilan University of Medical Sciences approved this research. Also, the ethics committee of this university corroborated its ethical considerations in terms of human subjects' rights and qualitative data collection and analysis. The students were informed of their rights and ensured that their identities would not be revealed throughout the study process. They could withdraw from the study at any time without being penalized. The permission to record the participants' voices was obtained and those who agreed to willingly participate in our research signed a written informed consent form.

Findings

During the data analysis, three main themes emerged including "easy life," "spending time," and "the experience of challenges." The meaning of each theme is presented by using the students' direct quotations below.

Easy Life

One of the extracted themes from the data was easy life. From the perspective of the students participating in the study, the most important smartphone usages were easy access to information, easy management of educating and learning affairs, ease of communication with family and friends, and affordable communication services, which all of them make the life easy.

Achieving information. One application of the cell phone was an easy access to information. Access to a variety of information via the cell phone was mentioned as the fastest method for achieving information. One female student stated, "Every time I encounter any questions, I find the answer swiftly via my cell phone." A male student added, "In my opinion, a cellphone is a very good guide and facility to find answers for many daily scientific questions." Another female student mentioned that "the cell phone really is a useful technology in life; when I came to this university I felt a need to it. It meets my needs to information for general and educational purposes." A male student explained:

The cell phone is a good technology. It provides us with scientific and information channels that are useful for improving our personal information. I prefer to read about news using my cell phone via the internet instead of watching television.

Another female student said, "Really, it is hard, if I want to spend one day without a cell phone; I feel ignorance and do not know what is going on. It seems that I am unaware of what is going on around me."

Handling school affairs. From the students' perspectives, another use of the cell phone was to handle school affairs. Access to the information shared by their friends, online groups, and becoming informed of class schedules were described by the participants. A female student declared, "When I have a question about the classroom's lesson plan, I share my question with my classmates via the online group and get the result." Another female student stated that "when I need the educational material, I share it with my classmate in the group and

immediately receive it.” A male student mentioned that “the greatest benefit of the cell phone in the classroom is that I can record the instructor’s voice or take photos of educational materials in the laboratory.” Another female student continued:

Since the cell phone is connected to the internet, everything has become easier. For example, the instructor shares his/her PowerPoint slides to the online group and I can easily download and read them. Also, at the end of the academic semester, I can check my scores and the results of final exams.

Easy communication. The availability of the cell phone as an easy and accessible tool for communication was emphasized by the participants. One of the female students stated that “there are not many opportunities for face-to-face and direct communication between students. We resolve our problems via the phone communication and send messages to friends and family members.” Another female student stated: “I am hundreds of kilometres away from my family and do not see my family members for months. I do not know what I would do if this simple and easy communication method was not available.” A male student said that “the cell phone is really easy to work with; if I am in an emergency, I can contact the family members or friends quickly via the cell phone. The distance is not a concern anymore.”

Cheap communication. The students expressed that the cell phone is a method for inexpensive communication with friends and family members. A male student said that “in terms of the cost of communication, the use of the cell phone is much more cost-effective than other methods, because most of us use the text messaging for greetings friends and family members.” A female student said, “The cell phone communication is a cost-effective method of communication. Using a short message or a brief call I can be informed of others.” Another female student stated:

Using the smart phone, I can make connections to the internet and other social networks such as Viber, Imo and so on, and also audio and visual communication with friends and family members are so cheap. It just needs an internet access and I do not have to pay money for a phone call and even for sending text messages.

Spending Time

One of the other extracted themes from the data was spending time. Most of the students participating in this study believed that smart phone technology can fill up their leisure time well and it is a useful fun instrument for filling up their loneliness through virtual friendship, participation in various social networks, computer games, watching movies and cartoons, and reading stories and novels.

Virtual friendship. Making virtual friendships in cyberspace using the cell phone was another aspect of the participants’ perspectives. For instance, they could communicate with old friends or find new virtual friends, though they had both positive and negative perspectives about it. A female student stated: “Leaving my own city to enter this university located in another city undermines old friendships. Therefore, no choice remains except keeping old friendships using virtual communication in the cyberspace.” A male student stated: “Finding new friends along with making close friendships is one positive aspect of the use of the cell phone.” Another male student said:

Generally, I am not a sociable person and I have not many friends, but since the time I have bought this cell phone, I have made communications with other

groups and social networks and have been able to find many virtual friends and spend my time in the cyberspace.

Another female student added: “I have a negative experience of making friendships with others in the cyberspace. Otherwise, the rest of my experiences of virtual friendships are good and positive.”

Participation in various social networks. Membership in social networks, communications with different people, and awareness of daily life issues were highlighted by the participants. A male student stated: “I am a member of several social networks and through which I receive scientific information. I think that if these social groups were not available, I would have no other option to achieve information.” A female student said that “one of the advantages of having the cell phone is membership in the scientific and recreational groups. In any network, I receive some practical information from different people.” A female student stated:

My cell phone is always with me and occasionally even between my classes, I make connections to the internet and check my messages on the Telegram. I have a lot of free time and membership in social networks amuse me so much.

A male student shared his perspective of membership in social networks in this way:

Membership in the Telegram made me lose some of my friends. Perhaps this was a positive experience, because membership in this social network helped me to find more friends and know the personality of my old friends much better.

Another male student added:

In spite of the advantages of membership in such social networks, it has some disadvantages. For instance, some people in such social networks take photos of their own personal life and show off the luxuries of their life. This may advertise the luxury style of living.

Computer games. The students had fun with the games available on their cell phones. From their perspectives, computer games made them feel relaxed and filled their leisure time. On the other hand, some students believed that computer games on cell phones were very addictive and time-consuming. A female student mentioned that “there are several games in my cell phone. When I get bored studying, I play the games.” A male student said, “Sometimes, I am alone at the dormitory and am not in the mood to talk to friends and go out, therefore, playing with such games is the best choice for filling my leisure time.” Another female student said that “I am severely addicted to computer games and spend my time with the games. I advise others not to install the games in their cell phone, because they make them addicted to playing the games.”

Watching movies and cartoons. Watching movies and cartoons via the cell phone was highlighted by the students. A female student said, “In autumn, the weather is cold and it is difficult to go out. Therefore, I choose a good movie to watch via my cell phone.” Another female student also said that “sometimes, I am alone and have a lot of leisure time. My cell phone becomes my best friend and I use it to get amused. For instance, I fill my leisure time through playing with its applications.” A male student stated:

Young people prefer watching movies via their own cell phones instead of via computers and laptops. The cell phone is always available and in access. I can connect to the internet whenever I want and watch movies online or download them and watch them later.

Reading stories and novels. The participants described that reading different stories and novels stored in their cell phones was a good option to fill their idle time. A female student said that “when school is over and I find an opportunity for non-academic affairs, reading novels via my cell phone is very hearty.” Some students talked about the cost-effective aspect of this application of the cell phone. A female student stated that “buying story books and novels is expensive, because I lose my interest to re-read the book once it’s finished. I store the files of storybooks in my cell phone and have access to many similar books without spending money.”

The Experience of Challenges

The third extracted main theme was the experience of challenges. Besides the different benefits of the smart phone technology, the students participating in the present study complained of some physical, psychosocial, and behavioural damages that they experienced them related to cell phone usage.

Physical problems. The use of the cell phone has led to physical problems in some participants. Some students sometimes complained about pain in their stomach, blurred vision, eye irritation, and severe headache as the results of overusing the cell phone. A female student stated, “When I use my cell phone for hours and play with games, I feel pain in my stomach.” Another female student added: “My friends and I believe that a severe headache is the result of the cell phone overuse.” A female student also said, “I often find that I have spent a lot of time listening to music via my cell phone or gazing at my cell phone. Therefore, I experience blurred vision.”

Psychosocial stress. The students stated that insomnia or a poor night's sleep; stress; insecurity in the cyberspace; the feeling of dependence and addiction to the cell phone; disruption in school tasks; arguments with parents; and keeping away from friends, family, and the society were the consequences of using the cell phone. A male student said:

The use of the cell phone takes us away from our friends and the society. Sometimes, when I get back to my family, I spend my time playing with the cell phone in a corner of the room. This makes my family members protest against my behaviors and have a quarrel with me.

Another male student continued:

The cell phone has disrupted my direct communication with family members and friends. In the past, I visited relatives and friends in different occasions and festivals. Nowadays, I send text messages to them or make telephone communications or greet them via the Telegram software.

Another female student said that “the cell phone influences the time for going to bed. I make myself busy with playing via the cell phone.” Another male student stated, “I am so dependent on my cell phone. This is really addictive. If I lose my cell phone, I get so nervous.” One of the female students declared that “since the day I bought the cell phone, I do not study at all. My mother says: ‘On weekends, when you come home you play with your cell phone and do not

study at all.” Another female student shared her concern regarding insecurity in the cyberspace in such a manner:

What is the cause for concern from my perspective is the issue of information security and privacy in the cyberspace and internet. I do not share my personal and familial photos in the cyberspace. I do not keep them also in my cell phone's gallery file.

Mood and behavioral problems. Some students described the changes in mood and affect, impatience, aggression, taciturnity, and behavioral problems as the result of the use of the cell phone. One female student said, “Since I frequently use my cell phone, I feel that I get angry at others easily and have no patience to communicate with others.” Another female student said that “I use my cell phone, because I am far away from my family members and feel the need to communicate with them. This has negatively affected my mood. I am impatient, speak less, and am always tired.” A male student added: “If you look at the behaviors of students, you find that they are busy with their cell phones. If they find any problem with their cell phones or lose their internet connection they get agitated.” Another female student said:

The overuse of the cell phone has impacted my lifestyle; even it has affected my eating habits. For instance, when I am busy with my cell phone or communicate in social networks, I do not eat, even if I am hungry. I postpone my eating time.

Given the negative consequences of the use of the cell phone, many students wished that they would not use it. They wished for less preoccupation with cell phone use and to remain relaxed. Some other students attributed the negative consequences of the cell phone to its overuse or inappropriate use. They believed that cultural development will be necessary for using the cell phone properly. Some students also attributed the overuse of the cell phone to a lack of recreational and exercise facilities and amusement in dormitories for students.

Discussion

In this study, the students' experiences of the use of cell phone were reported with the consideration of cultural-contextual factors. The themes developed in this study were easy life, spending time, and the experience of challenges.

According to our findings, the use of the cell phone could facilitate and accelerate the activities of daily living. The related subthemes were achieving information, handling the school affairs, easy communication and cheap communication. Information and communications technologies have created many changes in the contemporary society and affected the various aspects of our social life (Razeghi, Share pour, & AmriMaleh, 2013). In recent years, the use of cell phones, PDAs, and computer-smart phones has grown considerably. These portable devices have provided us with the quick access to information and made the communication between people easier (Tahamtan et al., 2012). The applications of the cell phone are data collection, online search, communicate with others, the production of content, organization of data and taking notes (Akanlisikum Akanferi, KwamiAziale, & Asampana, 2014; Razeghi et al., 2013). The cell phone improves the transmission, sharing and exchanging information between individuals and groups (Mehdizadeh & Khoshnam, 2014). The use of the cell phone in education has been empathized in some countries. In addition, Razeghi et al. (2013) in a study in Iran reported that 56% of participants considered the mobile phone an important tool for teaching and learning.

Another finding of this study showed that the cell phone helped with the organization and adjustment of class schedules among students and instructors. The cell phone has increased the social relationships in universities. Also, it has facilitated setting up appointments with instructors, coordinating educational schedules with instructors and improving the instructor-student relationship for removing academic problems (Mehdizadeh & Khoshnam, 2014). The study by Abedini and Zamani (2013) showed that the main use of the cell phone was informing each other of educational affairs.

Easy and inexpensive communication with family members and friends was mentioned by the students. Nowadays, people can use the internet and the cell phone technology to communicate with friends and family members around the world (Humphreys, 2010). In a study by Mehdizadeh & Khoshnam (2014), 66 percent of students had the high and very high feelings of security, though they were far away from their family members. In fact, the expansion of the cell phone use allows people to communicate with friends whenever and wherever they want (Razeghi et al., 2013). On the other hand, one of the important aspects of social relationships is communication with friends. Therefore, increasing the use of the cell phone is associated with positive social outcomes (Mehdizadeh & Khoshnam, 2014). Some participants stated that the cell phone was a cheap method for communication. They also considered text messaging a convenient and cost-effective method for communication. Similarly, the findings of Abedini and Zamani (2013) showed that students preferred text messaging to voice calling, because it was cheaper. In this respect, Geser (2004) believed that with the advent of the cell phone, the overall volume of human communication has increased, but its quality has remained low. For instance, writing a text message may show the presence of a strong relationship between people, but this kind of communication lacks human interactions, emotions and feelings.

We found that filling leisure time was another application of the cell phone. Contacting virtual friendships, membership in various social networks, playing with computer games, watching movies and cartoons, and reading stories and novels were the use of the cell phone with the aim of spending time. The cell phone has a wide scope of applications from achieving information to playing games (Abedini & Zamani, 2013). The cell phone can create a new atmosphere besides the private and intimate atmospheres within groups and leads to new types of social relationships between individuals (Ribak, 2009). Kosari, Javadi Yeganeh, and Kheirkhah (2008) described that the applications of the cell phone for young adults were communication with different users, saving music files and listening to music, taking photos, playing with games and storing movie clips and watching them. In the study by Akanlisikum Akanferi et al. (2014), the cell phone was used for listening to the radio and music, reading books and messages, and playing online games. In this respect, the findings of Razeghi et al. (2013) showed that the cell phone was mainly used for social communication, listening to music, being informed of calendar and clock, text messaging, calculator, Bluetooth, watching movies, and sharing photos.

The participants described the challenges of the cell phone overuse such as physical problems, psychosocial stress, mood disorders, and behavioural changes. They also highlighted the addiction to the cell phone due to its overuse or inappropriate use. Despite the importance of the cell phone in everyday life, evidence suggests that some people use the cell phone without any control on it, which has harmful effects on people's life similar to alcohol and drug addiction. The literature review shows that an inappropriate use of the cell phone can be one type of addiction of the technology (Babadi-Akashe et al., 2014). The findings of Sharifi and Eslamieh (2013) showed that students were mostly addicted to the internet and text messaging. In particular, young people are more likely to inappropriately use the technology for various reasons (Atadokht, 2016). Young people's vulnerability to the cell phone overuse can lead to dependency to this device (Babadi-Akashe et al., 2014). The excessive use of the cell phone

causes dependency and in severe cases leads to being routinized. Such dependence is also starting to become a habit just like an addiction to drugs, alcohol, overeating, sexual relationship, computer games and the internet (Atadokh, 2016). Nowadays, the internet addiction has become a subject of clinical sociology, sociology of health and illness, and the sociology of deviant behaviours (Musai & Darkesh, 2014). An exposure to electromagnetic fields and a short distance to the user can be very dangerous (Kizilay, Ozturan, Erdem, Kalcioglu, & Miman, 2003). Inappropriate use of the cell phone can cause severe social and cultural damages in the society (Razeghi et al., 2013).

The students in this study complained about sleep disturbances due to the excessive use of the cell phone. The findings of Atadokht (2016) showed that the cell phone overuse was associated with inability to sleep for more than 30 minutes in 69.75% of students, midnight or morning awakening in 60% of students, the turmoil of awakening in 42% of students, nightmares in 59% of students, the use of hypnotic drugs in 50% of students and an inability to stay awake during daily activities in 38.50% of students. The excessive use of the cell phone affects the nervous system and alertness and creates symptoms such as low quality of sleep and awakening at night (Atadokht, 2016). This finding is supported by that of other studies conducted in various countries (Johansson, Nordin, Heiden, & Sandstrom, 2010; Korpinen & Paakkonen, 2009) and Iranian studies (Aghajanoloo, Haririan, Ghafourifard, Bagheri, & Ebrahimi, 2012; Rezaei Ardani et al., 2012).

Some students described the impact of the cell phone on changes in mood and emotional distance from their family members. With an increase in children and teenagers' relationships in the cyberspace, the range of their interactions in the real world is reduced (Musai & Darkesh, 2014). It should be said that in the virtual and cyberspace, friendships and intimate relationships and interactions within the family that are the sources of social connections are replaced by superficial ties and unstable relationships that may harm social relationships (Edrisi & RahmaniKhalili, 2013). In general, the social damages are common in the cyberspace (Beheshti, 2013), and the cell phone similar to any other types of technology contains a mixture of strengths, weaknesses, opportunities, and threats (Hasanzadeh, et al., 2012).

Among other interesting findings of the present study was the emphasis of the students on the importance of the culture making for the appropriate use of the cell phone particularly among adolescents and young people in the Iranian society. Some students also attributed the overuse of the cell phone to a lack of recreational and exercise facilities and amusement in dormitories. Therefore, education and cultural development are required by public institutions including the ministry of education and higher education as well as education to families regarding the use of information and communication technologies for reducing the cell phone threats and improving its opportunities. On the other hand, providing cultural programs, sports and leisure facilities by cultural institutions to enrich students' spare time are suggested.

Of the limitations of this study is a lack of the transferability of our findings due to its qualitative nature. However, the researchers tried to choose an appropriate number of participants and consider the maximum variation in sampling for enhancing the rigor of this study. This study was conducted with a sample of medical sciences' students in a university in the north of Iran; therefore our findings may not transfer to other students in other parts of Iran. Future studies are required to conduct similar studies with non-medical sciences' students.

In this study, the students' experiences of the use of cell phone technology were reported in three themes as easy life, spending time, and the experience of challenges. Improving our knowledge of the experiences, perspectives and opinions of students about one of the most widely used information and communications technologies can explore the potential benefits, including educational and cultural needs of participants, challenges and common problems associated with the use of this technology. Also, based on our findings,

authorities, cultural institutions, and educational policy makers should encourage culture development using education through media and education during the early childhood and before using any software.

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