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Smartphone and Iranian Women: Prevalence and Predictors of Problematic Smartphone Use

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The increasing number of cellphone applications has enhanced the likelihood of Problematic Smartphone Use (PSU). The current cross-sectional and descriptive-correlation study was conducted to investigate the prevalence and predictors of PSU among women. The research society was all married women in West Azarbaijan and East Azarbaijan provinces in Iran. Of that, 452 women participated in the research through convenience and purposive sampling. Contingency tables, zero-order Pearson correlation, Chi-squared, Cramér's coefficients and a stepwise regression analysis were used to analyze the data. To collecting data Problematic Mobile Phone Use Questionnaire-Revised, Kansas Marital Satisfaction Scale, University of California Los Angeles Loneliness version III, and some demographic items were used. Results showed that more than half of the women used smartphones to communicate (besides talking) (57.2%), most frequently used WhatsApp (36.6%), Instagram (26.9%), and Telegram (21.6%). Furthermore, 37.8% of the participants used smartphones at a slightly problematic level, 10% at the problematic level, 3.5% at a very problematic level. Moreover, the regression analysis results also revealed that loneliness, marital satisfaction, and duration of marriage could significantly predict PSU. According to the finding's, Iranian married women are less involved with PSU, however features such as loneliness, marital satisfaction, and years of marriage could explain individuals' tendency to PSU. These factors are thus recommended to be considered in the prevention and treatment of PSU.

Keywords: loneliness, marital satisfaction, prevalence, problematic smartphone use, women.

Nowadays, cell phones and smartphones are considered an integral part of individuals' daily lives. They provide many facilities for individuals to achieve educational goals, have access to information, establish and maintain social relationships (Elhai, Dvorak, Levine, & Hall, 2017), do the shopping, use e-banking, and play game (Ofcom, 2016). Their comprehensive effectiveness, practicality, and ease of access have made humans much more dependent on smartphones. Concerns about the excessive and problematic use of smartphones have aroused many concerns internationally, thereby driving the World Health Organization (2015) to declare smartphone addiction/dependency

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as a public health concern and highlight the need to research its dimensions, course, predictors, and consequences.

A review of the literature reveals little agreement on the definition of PSU. PSU is described using different terms such as addiction, dependency, overuse, problematic use, high use, and excessive use (Amiri, Dowran, Salimi, & Zarghami, 2020). Reviewing the existing literature, Billieux (2012) illustrates it as "a failure in regulating the use of smartphones, which is associated with many negative consequences in daily life" (p. 1). PSU is a form of behavioral addiction in the framework of human-machine interactions (Lin et al., 2014). The behavior represents addiction to smartphones or their problematic use and is a form of technology addiction aroused from the deleterious and pathological use of smartphones. According to Kuss and Griffiths (2017), individuals get addicted to smartphone applications and content. In other words, addiction, in this case, refers to getting addicted to Facebook, Instagram, WhatsApp, Telegram, online games, and so on. Accordingly, some researchers (e.g., Montag, Wegmann, Sariyska, Demetrovics, & Brand, 2019) introduced the term Smartphone Use Disorder (SUD) which is a form of Internet Addiction Disorder (IAD). In this case, the remarkable point is an individual's transition from a healthy behavior to a psychopathological one. This means that smartphones are not to be blamed for being overused or excessively used; however, understanding PSU or SUD lies in many existing applications, some of which are highly attractive to individuals (Alter, 2017).

In the light of the evidence, one in four English youthes suffer from PSU (Sohn, Rees, Wildridge, Kalk, & Carter, 2019). This accounts for 20.2% of Lebanese adults aged 18-65 years (Nahas, Hlais, Saberian, & Antoun, 2018). The prevalence of PSU among Chinese adults aged 18 or above 18 years is 38.5% (Luk et al.,

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2018). In this regard, Iran is one of the countries with a remarkable increase in using cell phones and smartphones. Some statistics estimate about 53 million mobile phones in Iran, with smartphones accounting for 69% of this rate (Amiri et al., 2020). In a review study, Amiri et al. reported the prevalence of dependency to be 0.9-64.5 among their participants, who were mainly university students and high school students. Since majority of the researches on PSU or similar concepts have studied high school/university students and adults among both gender, there are not enough information about preference usages of smartphone, the prevalence of PSU or related concepts and contributing factors of PSU among women. However, some researches have reported smartphone overuse among females (e.g., Luk et al., 2018).

This is an essential issue because, many studies have addressed negative results related to PSUs (or SUDs). They have documented an association between the overuse of smartphones with addiction-like symptoms and dependency (Billieux, van der Linden, & Rochat, 2008); low family wellbeing and poor family relationships (Guo et al, 2019), decreased social skills, emotional intelligence, and low empathy (Scott, Valley, & Simecka, 2016); high anxiety, depression, low subjective happiness, and mental wellbeing (Guo et al., 2020); depression, anxiety, and perceived stress (Sohn et al., 2019); low quality of sleep (Sohn, Krasnoff, Rees, Kalk, & Carter, 2021); social isolation (Primack et al., 2017); and impulsivity (De-Sola, Talledo, Rubio, & de Fonseca, 2017).

Some studies addressing PSUs or synonymous concepts in both genders have reported the high prevalence among women (e.g., Tugtekin, Tugtekin, Kurt, & Demir, 2020). Some other studies (e.g., Luk et al., 2018) have also reported smartphone

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overuse among females. Furthermore, according to research, female individuals mainly consider technologies, including smartphones and the Internet, as communication instruments (Roberts, Yaya, & Manolis, 2014) and use them to socialize through virtual social webs, send messages, expand interpersonal relationships, and collect information (Anshari et al., 2016).

A review of the research revealed that different smartphone and PSU usage was less addressed among women, especially in Eastern societies. To fill this gap, the present study aimed to examine a variety of usage of smartphones and the prevalence of PSU among women. Furthermore, since marriage is associated with remarkable changes in Eastern women's lives, we aimed to study PSU and its predictors among married ones.

On the other hand, the research on the PSU predictors has confirmed the role of factors such as demographic characteristics (e.g., age and gender) (Vally & El Hichami, 2019); personality traits, and relevant psychological mechanisms (e.g., five personality traits) (Marengo et al., 2020); Self-concept and relevant psychological mechanisms (e.g., self-esteem) (Kim & Jahng, 2019); family factors (e.g., parenting style or domestic violence) (Fischer-Grote, Kothgassner, & Felnhofer, 2019). In order to investigating the appropriate and most related variables, we studied the literature and theories related to PSU and as well as the field of using technologies by married women.

According to the literature and Compensatory Internet Use Theory or CIUT (Kardefelt-Winther, 2014) we decided to study loneliness and marital satisfaction as predictors of PSU among married women. To this end, loneliness, marital satisfaction, and some of the demographic variables (namely length of marriage, age, level of education, occupation, and the number of children) were included in this study as the possible predictors of PSU among married women. The aforementioned variables were

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included because of their significant effect on married women's lives.

We found that Compensatory Internet Use Theory or CIUT (Kardefelt-Winther, 2014) suggests that people encountering negative life situations may be motivated to relieve their adverse feelings by engaging in excessive smartphone use. This theory focuses on the social and process motives of using smartphones. The two motives are associated with the use/problematic use of smartphones (van Deursen et al., 2015). Process motive involves consuming media to seek entertainment and escapism (Stafford et al., 2004), whereas social motive involves using media to communicate and build relationships with others (Stafford et al., 2004; van Deursen et al., 2015). According to CIUT, loneliness, and low marital satisfaction through the urge and need to create social relationships and reduce the unpleasant feelings probably be associated with PSU.

Some research revealed that female individuals use their smartphones to perform remarkable and necessary functions and spend considerable time working on social networks and entertainment applications (Taywade & Khubalkar, 2019). According to research, female individuals mainly consider technologies, including smartphones and the Internet, as communication instruments (Roberts, Yaya, & Manolis, 2014). They use them to socialize through virtual social webs, send messages, expand interpersonal relationships, and collect information (Anshari et al., 2016). Study of Hawi's (2012) also revealed that, among various Internet activities, women mainly prefer communication and messaging and mostly use smartphones as a means of emotional communication (Lin et al., 2014). Although researchers have focused on which part(s) of smartphones attracts/attract women, this issue is not addressed

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among Iranian women sufficiently. Hence, in the current study, we sought to explore how women use their smartphones and their preferences.

In some studies, such as Mitchell and Hossein (2018) the female gender was one of the PSU predictors. Some other studies (e.g., Luk et al., 2018) have also reported smartphone overuse among females. However, the prevalence of PSU among married adult women, especially in Eastern societies, has been disregarded in the literature. As a traditional society transiting to an industrial society, Iran has experienced remarkable progress in many fields, including women's employment and education. However, like most Eastern countries, this country is also entangled between tradition and modernity. Such an issue of inequivalence is even more observed among women as many educated women still live under the control of tradition and culture, are dominated by their husbands, and are not allowed to work outside and cooperate in society. Accordingly, they can pursue their interests and aspirations in the virtual space. The present study was to investigate prevalence of PSU among Iranian married women.

Loneliness is described as a result of an individual's lack of intimate bonds with significant others. It is shown in two domains, social and emotional. The first refers to inadequate social relationships with friends, co-workers and so on, the second is related to a lack of intimate relationships with family members and significant others (Weiss 1973). In other words, an individual feels lonely when one notices no harmony between his desired social contact and the contact in reality (Woodhouse, Dykas, & Cassidy, 2012). Accordingly, those who feel lonely would experience lower levels of life satisfaction (Fiori & Consedine, 2013) and psychological well-being (Chen & Feeley, 2014) since their social relations do not meet the desired quantity and quality. This issue is likely to be more highlighted in Eastern

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societies for Eastern women, where women are much more restricted regarding entertainment and recreation spaces and mainly play traditional female roles (e.g., housekeeping, childbearing, etc.), as such a large group of women are limited to their houses and have higher levels of loneliness. According to the literature, lonely people are more likely to abuse virtual social networks (Giota & Kleftaras, 2013). To sum up, loneliness and motivations to use smartphones are two main individual features, which probably predict PSU (Bian & Leung, 2014; Kim, 2017). In their study, Jiang, Li, and Shypenka (2018) reported loneliness as the strongest predictor of smartphone addiction among international students. Loneliness is thus related to dependency on virtual social networks (De Cock et al., 2014) and those feeling more socially isolated are more prone to use virtual tools and networks (Primack et al., 2017). According to the literature we hypothesized that loneliness could predict PSU.

Marital satisfaction refers to the feeling of contentment, satisfaction, and pleasure aroused in each the married couple when they delve into all aspects of one's marital life (Bilal & Rasool, 2020). In other words, marital satisfaction represents a mental and psychological state aroused by evaluating the benefits of marriage to that person. It plays a critical role in continuing a pleasant and high-quality marital life (Sánchez-Fuentes, Santos-Iglesias, & Sierra, 2014). Marital satisfaction encompasses a variety of dimensions, including sexual satisfaction, the spouse's support, involvement in decision-making processes, relations with the spouse's family, social support, psychological wellbeing, and life satisfaction (Gutiérrez et al., 2016; Lee et al., 2016; Lin et al., 2014). From a broader perspective, marital satisfaction has three axes: (1) interaction with the spouse (what affects the spouse's satisfaction/frequency of seeking interaction with each

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other), (2) emotional dimensions of the spouse (to what extent the spouses are satisfied with each other's emotional dealing), and (3) practical dimensions of marriage (how satisfied each spouse is with the another one's engagement and cooperation in personal, organizational, prioritization, and problem-solving issues and house-related rules and contracts). Such comprehensiveness may affect other aspects of individuals' lives (Villa & Del Prette, 2013). Context, culture, gender role expectations, and social norms should also be addressed in this regard.

Married women have been less addressed in the PSU literature; therefore, no background information is available. When couples' emotional needs are unmet, and they stay apart for a while for different reasons, their involvement in another relationship with another person/partner meeting their needs is more likely (Harley & Chalmers, 2013). That is, when individuals feel higher levels of loneliness and are emotionally cold in their marital relations, they would resort to social networks to escape from such feelings and the unpleasant feelings of dissatisfaction with marital life and marital conflicts (Ali, Farrer, Gulliver, & Griffiths, 2015; Wilson, Fornasier, & White, 2010). In this regard, small smartphones in women's hands may be the simplest and the most convenient tools to socialize and decrease emotional and psychological deficiencies. Exploiting cyberspaces and smartphones may compensate for failures and drawbacks in various aspects of individuals' lives, including marital lives. The same comes true for Eastern women living with even further restrictions.

Age was one of the demographic features concerned in the present study. This variable has impacts on individuals' states, traits, functions, and psychological features (Graham & Lachman, 2014; Specht, 2017). A review of the literature on the relationship between age and smartphone use revealed that introducing innovations in smartphones and providing the context

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for developing the skills required to use them have stimulated the young to use smartphones more than the elderly, resulting in the unrestricted, spontaneous, and extensive use of smartphones (e.g., Csibi, Griffiths, Demetrovics, & Szabo, 2019; Chóliz, 2012). Furthermore, smartphone use is associated with autonomy, achieving identity, and prestige for young adults (Walsh, White, & Young, 2010). From another perspective, since younger adults exhibit more risky and impulsive behaviors and less control of their impulses, they are more vulnerable to addiction and risky behaviors (Chóliz, 2012; Kita & Luria, 2018), thereby, more prone to PSU (Chóliz, 2012). According to Mitchell and Hossein (2018), impulsive behaviors, the need for reassurance in interpersonal relations, and the young age drive individuals to spend more time on their cell phones and expose them to PSU.

Consistent with these findings, some studies have reported age as a PSU predictor, suggesting that the younger suffer from higher levels of PSU (Laurence, Busin, Lima, da Cunha, & Macedo, 2020; Kaviani, Robards, Young, and Koppel, 2020). Given the findings of previous studies indicating the effect of female gender and young age on PSU (Laurence et al., 2020; Lee & Lee, 2017), age is also a factor associated with smartphone use and a PSU predictor among married women.

Another factor affecting different aspects of married women's lives is the number of children. Previous studies indicated that women's social support and marital satisfaction decrease as the number of children increases (Karayagiz, Ertuğrul, & Hamurcu, 2019), and maternal parenting is associated with mothers' anxiety, stress, and poor affective well-being (Skreden et al., 2012). Moreover, compared to men, women are concerned about the possible negative impacts of using smartphones on parenting since they have more responsibilities in their parenting roles

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(Thompson & Walker, 2004). For example, women are dissatisfied with being ignorant of their surroundings when they get addicted to using smartphones because they cannot meet their children's needs at that moment. They also feel concerned that their children imitating their mothers and engaging in technology in the future would disregard their lives and surrounding environment (Johnson & Hertlein, 2019). Studies examining the relationship between the quality of maternal care and smartphone use have also documented that mothers using smartphones for extended period have lower levels of care sensitivity (Wolfers, Kitzmann, Sauer, & Sommer, 2020). While no study has directly researched the relationship between the number of children with PSU or similar terms. Accordingly, in the present study we included the number of children as another variable probably affecting PSU.

One more factor affecting the family system's performance and the couple's relations is the duration of the marriage. As Li and Fung (2011) asserted, young couples have personal growth goals (e.g., desire to improve or self-actualize in marriage). Middle-aged couples have instrumental goals (e.g., quality of marriage in practice or housework), and older couples prioritize companionship goals (e.g., the personal need for empathy and communication in marriage and marital life). In other words, the couples' prioritized growth goals also change over time. This is why the duration of marriage is a critical feature of marital life. From Li and Fung's (2011) perspective, couples' quality of communication, marital satisfaction, and problem-solving strategies change throughout their marital life. For example, a study on newlywed couples revealed that the couples' marital satisfaction and constructive communication were influenced by behaviors aroused by poor control of personal desires and impulses (Tan, Jarnecke, & South, 2017).

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Furthermore, the quality of marital life seems to be correlated with the couples' well-being over time due to their physiological changes and decreased social interactions with coworkers and friends (Carr, Freedman, Cornman, & Schwarz, 2014), as the couples' dependency on each other affects the quality of their marital life and consequently their wellbeing and health status (Robles, Slatcher, Trombello, & McGinn, 2014). In this regard, the changes in the extent and source of stressors and the quality of communication during a marital life alter the couples' tendency to use smartphones. To the best of the researchers' knowledge, no study has examined the relationship between the duration of marriage and PSU. Accordingly, we considered the duration of marriage in years as one of the present study variables.

In addition to the aforementioned factors, women's employment status and education also affect women's personal and family dimensions. Employment positively affects individuals' social self-concept, marital satisfaction, the sense of efficiency, and self-competence (Toller, Kelley, & Stebbing, 2009). Since low self-esteem and depression exposes individuals to PSU (Vally & El Hichami, 2019), employment is expected to play a critical role in causing PSU among women.

Furthermore, women's education is also associated with positive consequences as it provides opportunities in the labor market, promotes their health status, makes them financially independent, and empowers them (Hahn, Nuzhat, & Yang, 2017). Moreover, the other consequences of women's education are promoted sexual and marital satisfaction (Bilal & Rasool, 2020). There are inconsistent findings regarding the relationship between individuals' level of education and control over smartphone use. Barnes, Pressey, and Scornavacca (2019), for example, found out that control over smartphone use enhanced as

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the level of education increased. In contrast, Kwon, So, Han, and Oh (2016) reported a reverse relationship. Generally, no evident finding is achieved regarding PSU, occupation, and the level of education among married women. Accordingly, this variable was also examined in the present study.

Studying PSU does matter. Since there is not enough research on this issue among women, there is a gap to be addressed. Then, studying different usage of smartphones, the prevalence of PSU, and predictors of that among women are considered in the current study. The present research results would provide more information about the aforementioned issues related to PSU women. They could be used to protect women from PSU through conducting intervention programs.

To this end, this study dealt with PSU and its relationship with marital satisfaction, loneliness, age, occupation, level of education, number of children, and duration of the marriage. Accordingly, the following research questions and hypotheses were posed:

Research question 1: What is the main usages of smartphone among Iranian married women?

Research question 2: How prevalent is PSU among married Iranian women?

Hypothesis 1: loneliness will predict PSU of Iranian women.

Hypothesis 2: Marital satisfaction will predict PSU of Iranian women.

Hypothesis3: Demographic characteristics play a role in predicting PSU.

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Method

The current research was cross-sectional and descriptive-correlation study. The research population encompassed all married women in West Azarbaijan [Urmia (center), Bukan (south), Naghadeh(south), Khoi (northwest), Mako (north), Oshnavieh (west), Miandoab (south) and Tekab (southeast)], and East Azarbaijan provinces [Tabriz (center), Maragheh (South), Shabestar (west), Marand (northwest), Sarab (East), Ahar (northeast) and Azarshahr (southwest)] in Iran. The method of sampling was convenience and purposive. The inclusion criteria in this research were as follows:

- At least one year of marital life,
- Living with a spouse while participating in the study,
- Consistent use of smartphones over the last year,
- Access to the Internet and virtual social networks and using them.

The questionnaires were developed via Google Forms, an online platform for surveys and questionnaires. Then the links were shared in social groups on the Telegram and WhatsApp applications, two popular social networks in Iran, inviting women to participate in the study. In other words, the questionnaires were developed via Google Forms, an online platform for surveys and questionnaires. Then the links were shared in social groups on the Telegram and WhatsApp applications, two popular social networks in Iran, inviting women to participate in the study. In other words, participants were invited to complete the online survey voluntarily through social networks. We aimed to cover diverse married women based on research variables, such as education level and job (as some proposed predictors) in

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northwestern Iran. According to the study and investigation of some of the researchers (such as Kaviani et.al, 2020), we concluded that the best way to conduct the questionnaires was online form and inviting people to participate. During two months, 452 women completed the questionnaires completely and were included in the analysis. Then, no animal or human experiment was included in this study. All participants voluntarily participated in this study, the questionnaires were filled anonymously, and the participants' information was only used for research objectives.

Instruments

Demographic Information

The participants' demographic information was collected using a questionnaire addressing their age, the type of Internet used, occupation, socio-economic status, level of education, number of children, duration of marriage, duration of smartphone checks at bedtime, length of smartphone use, source of income, type of smartphone use, and preferred application. In this regard, the participant's age, occupation level of education, number of children, and duration of marriage were included as predicting variables.

Problematic Smartphone Use

Problematic Mobile Phone Use Questionnaire-Revised (PMPUQ-R*)*, developed by Kuss, Harkin, Kanjo, and Billieux (2018), was used to assess PSU. It contains 16 items and addresses three subscales of dependent use (items: 1-7), prohibited use (items: 8-9-10-13), and dangerous use (items: 11-12-14-15-16), items are scored in reverse. Responses were measured on a four-point Likert scale (ranging from 1 = strongly disagree to 4 = strongly agree). Overall scores ranged from 16 to 64. Higher scores represent a greater likelihood of potential

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problems arising due to mobile phone use. The total Cronbach's alpha coefficient of this scale was reported to be .86. The EFA revealed a three-factor solution which explained 54% of the variance in scores. The factor structure was tested using a CFA. All items showed significant positive factor loadings with standardized coefficients ranging from .482 to .805. Additionally, modification indices were: CFI = .927, TLI = .906, RMSEA = .062, SRMR = .054, < .000) (Kuss, Harkin, Kanjo, and Billieux, 2018). Kaviani, Robards, Young, & Koppel (2020) has reported the Cronbach's alpha coefficient for dependent use, prohibited use and dangerous use equal to .86, .73 and .71, respectively. This questionnaire was translated into Persian by the first author and then translated back into English by another translator. Afterward, two psychologists examined and matched the Persian and English versions, removed the semantic errors, and eventually confirmed that the Persian version of the questionnaire was appropriate to conduct.

In the current research the EFA revealed a three-factor solution which explained 53% of the variance in scores. The factor structure was tested using a CFA. All items showed significant positive factor loadings with standardised coefficients from .47 to .81. Fit indices were: CFI = .90, TLI =.91, RMSEA = .060, SRMR = .051, < .000). Also, the Cronbach's alpha coefficients for the whole scale and the subscales of dependent use, prohibited use, and dangerous use were .86, .86, .73, and .79, respectively.

Marital Satisfaction

The Kansas Marital Satisfaction Scale (KMSS) was used to measure marital satisfaction. This questionnaire was developed by Schumm, Scanlon, Crow, Green, and Buckler (1983) and has

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three questions with a seven-point Likert scale ranging from very dissatisfied (1) to very satisfied (7). It's total score ranges from 3 to 21 and Cronbach's alpha was .84 in the research of these researchers. Arab Alidosti, Nakhai, and Khanjani (2014) reported Cronbach's alpha coefficient equal to .98. In exploratory factor analysis and pebble diagram for KMSS, one factor was obtained. To determine the criterion validity, the area under the questionnaire's ROC curve was calculated equal to .91. Mikaeili Manee, Shirzadeh and Abkhiz (2022) reported Cronbach's alpha coefficient equal to .855. In the current study the Cronbach's alpha coefficient of this scale was .96.

Loneliness

The 20-item University of California Los Angeles Loneliness version 3 (UCLA-LS3), developed by Russell (1996), was used to assess the participants' loneliness. Its scoring is done on a four-point Likert scale: "never = 1 to often = 4" where questions 1, 4, 5, 6, 9, 10, 15, 16, 19 and 20 are scored in reverse. Coefficient alpha ranged from .89 to .94 across different samples. Also, the validity of this version of the scale was supported by investigating convergent and construct validity and factor structure (Russell, 1996). In the work of Arimoto and Tadaka (2019) Coefficient alpha was .93 and validity of the scale was desirable. The results of the CFA for the single-factor model indicated that the model's goodness of fit was desirable. (GFI =.882, AGFI = .840, CFI = .932, RMSEA = .066). The persian version of this questionnaire was used in this study. According to Pasha and Esmaili (2006), the above questionnaire was translated by Shekarkan and Mirdrikund. Pasha and Esmaili (2006) used Cronbach's alpha and halving methods to determine its reliability, the values of which were .75 and .71, respectively, and its concurrent validity was obtained with the anxiety test at .4. Its Cronbach's alpha

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coefficient in the research of Cheraghiani (2021) was .90. Cronbach's alpha coefficient in this study was estimated to be .88.

Data Analysis

The SPSS software version 26 was used to analyze the data. Contingency tables were used to examine the research questions, and Zero-order Pearson correlation, Chi-squared, Cramér's coefficients, and stepwise regression analysis were used to investigate the hypotheses.

Results

Socio-Demographic Characteristics

Table 1 summarizes the participants' demographic features and their descriptive statistics. As presented in Table 1, the participants mainly were in the age group of 26-39 years (46.2%). Most of the respondents were housewives (50.1%) and held a bachelor's degree (42.7%). Moreover, most of the women included in this study had two or three children (40.6%), most of them placed themselves in a middle socio-economic class (52.5%). The participants mostly had no income, and their husbands were in charge of life expenditures (59.2).

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Table1
Socio-Demographic Characteristics; Frequency (Percentage)

Variable	Level	F(%)	Variable	Level	F(%)
Age	18-25	78 (17.3)	**Education level**	Undergraduate	25 (5.5)
	26-39	209 (46.2)		Diploma	72 (15.9)
	40-59	156 (34.5)		Associate degree	28 (6.2)
	60+	9 (2.0)		Bachelor	193 (42.7)
Duration of the marriage	15≥	274 (60.5)		Master	110 (24.3)
	15-30	137 (30.2)		Doctoral degree	24 (5.3)
	30+	41 (9.1)			
Number of children	No child	103 (22.7)	**Source of income**	Participant	34(7.5)
	1 child	160 (35.3)		Husband	268(59.2)
	2 and 3 children	184 (40.6)			

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	4 and 5 children	5 (1.1)		Both	150
SES	Weak	10 (2.2)	**Occupation**	Housewife	227 (50.1)
	Lower middle	52 (11.5)		University student	8 (1.8)
	Middle	238 (52.5)		Teacher	75 (16.6)
	Upper middle	141 (31.1)		Self- employment	40 (8.8)
	Upper class	11 (2.4)		Employee	23 (5.1)
	Offline games	4 (0.9)		Industrialist	4 (0.9)
	Youtube	3 (0.7)		Physician	7 (1.5)
				Retired	17 (3.8)
				Health and therapeutic careers	12 (2.7)
				Other	39 (8.6)

Smartphone Use

For the qualitative variables frequency and frequency percentages were calculated that are presented in Table 2.

Table2

Descriptive Statistics of Qualitative Variables Related to Smartphone Use; Frequency (Percentage)

	Level	F(%)	Variable	Level	F(%)
Checking before bedtime(minute)	0-5	153 (33.8)	**Internet port**	WiFi	82 (18.1)
	10-30	118 (26.1)		Cellphone data	151 (33.3)
	30-60	111 (24.6)		Both	219 (48.3)
	60-120	51(11.3)			
	120-180	14 (3.1)	**During of owning phone**	5≥	92 (20.3)
	180-240	2 (0.4)		5 - 10	280 (61.8)
	240+	3 (0.7)		10-15	67 (14.8)
				15+	13 (2.9)
Applications	Whats App	166 (36.6)	**Usage of phone**	Communication	259 (57.2)
	Instagram	122 (26.9)		Browsing	54 (11.9)
	Telegram	98 (21.6)		Photography	47 (10.4)
	News sites	19 (4.2)		Educational and	46 (10.2)
	Facebook	18 (4.0)		Media and news	30 (6.6)
	Webs	15 (3.3)		Cooking and decorating	16 (3.5)
	Twitter	7 (1.5)			
	Offline games	4 (0.9)			
	Youtube	3 (0.7)			

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According to table 2, most women reported either not checking their smartphones before bedtime or checking for a maximum of 5 minutes (33.8%). A majority of the participants (61.8%) had smartphones for 5-10 years and the majority of them (48.3%) used both Internet ports. More than half of the women (57.2%) used smartphones to communicate (besides talking). Married women most frequently used WhatsApp (36.6%), Instagram (26.9%), and Telegram (21.6%).

Problematic Smartphone Use (PSU)

Regarding the first research question, the scores were converted to standard Z-scores because no cut-off point was specified for PMPUQ-R. Then, considering ±1, ±2, and ±3 standard deviations from the mean as the cut-off points, the variable was classified into six levels. The prevalence for each category was examined in different groups about the demographic variables using contingency tables. The results are reported in Table 3.

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Table3

Severity level of PSU and socio-demographic characteristics; Frequency Percentage)

Variable	Category	Very normal	Normal	Non-problematic	Slightly problematic	Moderate Problematic	Very problematic	Correlation
Age	18-25	3(3.8)	24(30.8)	.0	41(52.6)	8(10.3)	2(2.6)	$X^{2(}(15)=26.08$
	26-39	26(12.4)	64(30.6)	8(3.8)	74(35.4)	25(12.0)	12(5.7)	$V^2 = .14$
	40-59	23(14.7)	64(41.0)	3(1.9)	53(34.0)	11(7.1)	2(1.3)	Sig=.04
	+60	1(11.1)	4(44.4)	.0	3(33.3)	1(11.1)	0.0	
Occupation	Housewife	23(10.1)	86(37.9)	5(2.2)	88(38.8)	21(9.3)	4(1.8)	$X^2(45)=62.94$ $V^2 = .17$
	University student	.0	4(50.0)	.0	3(37.5)	2.2(12.5)	.0	Sig=.04
	Teacher	5(6.7)	26(34.7)	4(5.3)	33(44.0)	5(6.7)	2(2.7)	
	Self employment	7(17.5)	13(32.5)	.0	14(35.0)	5(12.5)	1(2.5)	
	Employee	3(13.0)	5(21.7)	.0	9(39.1)	3(13.0)	3(13.0)	
	Industrialist	1(25.0)	(250.0)	.0	1(25.0)	.0	.0	
	Physician	2(28.6)	1(14.3)	.0	3(42.9)	1(14.3)	.0	
	Retired	4(23.5)	8(47.1)	.0	5(29.4)	.00	.0	

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		Health and therapeutic careers	.0	3(25.0)	0.0	6(50.0)	3(25.0)	.0	
		Other	8(23.5)	8(20.5)	2(5.1)	9(23.1)	6(15.4)	6(15.4)	
	Education	Undergraduate degree	2(8.0)	6(24)	3(12)	8(32.0)	4(16.0)	2(8.0)	$X^2(25)=31.22$ Sig=.18
		Diploma	11(15.3)	29(43.0)	.0	28(38.9)	4(5.6)	.0	
		Associate degree	3(10.7)	11(39.3)	.0	12(42.9)	2(7.1)	.0	
		Bachelor	18(9.3)	70(36.3)	2(1.0)	73(37.8)	22(11.4)	8(4.1)	
		Master	15(13.6)	31(28.2)	5(4.5)	43(39.10)	11(10.0)	5(4.5)	
		Doctoral	4(16.7)	9(37.5)	1(4.2)	7(29.2)	2(8.3)	1(4.2)	
	Duration of the marriage	15≥	28(10.2)	81(29.6)	7(2.6)	109(39.8)	35(12.8)	14(5.1)	$X^2(10)=31.7$ $V^2 = .19$
		15-30	13(9.5)	58(42.3)	4(9.2)	53(38.7)	8(5.8)	1(0.7)	Sig=0.000
		30+	12(29.3)	17(41.5)	0.0	9(22/0)	2(4.9)	1(2.4)	
N	**u m b**	No child	10(9.70)	32(31.1)	1(1.0)	40(38.8)	16(15.5)	4(3.9)	$X^2(15)=24.83$

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	1 child	14(8.8)	53(33.1)	6(38.0)	61(38.1)	18(11.3)	8(5.0)	V^2 = .14 Sig=0.05
	2 or 3 children	29(15.8)	70(38.0)	3(1.6)	67(36.4)	11(6.0)	4(2.2)	
	4 or 5 children	0.0	1(20.0)	1(20.0)	3(60.0)	0.0	0.0	
SES	Weak	0.0	39(30.0)	0.0	4(40.0)	2(20.0)	1(10.0)	$X^2(20)=48.25$ V^2 = .16
	Lower middle	1(1.9)	20(38.5)	4(7.7)	17(32.7)	6(11.5)	4(7.7)	Sig=.000
	Middle	33(13.9)	73(30.3)	6(2.5)	87(36.6)	33(13.9)	7(2.9)	
	Upper middle	18(12.8)	57(36.5)	.0	60(42.6)	4(2.8)	2(1.4)	
	Upper class	1(9.1)	49(36.4)	1(9.1)	3(27.3)	.0	2(18.2)	
Source of income	Participant	3(8.8)	15(44.1)	.0	9(26.5)	5(14.7)	2(5.9)	$X^2(10)=39.15$ Sig=0.12
	Husband	25(9.7)	99(36.9)	8(3.0)	105(39.2)	25(9.3)	5(1.9)	
	Both	24(16.0)	42(28.0)	3(2.0)	57(38.0)	15(10.0)	9(6.0)	
PSU in whole sample(n=452)		53 (11.7)	156(34.5)	11(2.4%)	171(37.8%)	45 (10%)	16 (3.5%)	-

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Table 3 shows a significant relationship between PSU and some demographic variables, including age, occupation, duration of the marriage, number of children, and smartphone use.

Younger adults in the age groups of 18-25 and 26-39 years were mainly at a slight PSU (52.6% and 35.4%, respectively), and middle-aged and older adults were less likely to experience problematic and high levels of PSU. Regarding occupation and the level of education, most of the participants exhibited slightly PSU. Furthermore, a majority of the women with a shorter duration of marriage had slightly PSU (39.8%), and those with longer marital life were at the normal level of PSU. In addition, as presented in table 3, for PSU in whole sample(n=452), there are some participants (37.8%) at the slightly problematic level, 10% at the problematic level, 3.5% at a very problematic level, and 48.6% at a very normal, normal and non-problematic level.
Table 4 shows severity level of PSU and variables related to smartphone use.

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Table 4

Severity Level of PSU and Variables Related to Smartphone Use (Frequency/Percentage)

Variable	Category	Very Normal	Normal	Non-problematic	Little problematic	Moderate Problematic	Very problematic	Correlation
Internet port	WiFi	13(15.9)	36(43.9)	2(4.2)	25(30.5)	5(6.1)	1(1.2)	$X^2(10)=13.15$ Sig=.22
	Cellphone data	12(7.9)	45(29.8)	4(2.6)	67(44.4)	18(11.9)	5(3.3)	
	Both	28(12.8)	75(34.2)	5(2.3)	79(36.1)	22(10.0)	10(4.6)	
Usage of the phone	Communication	30(11.6)	83(32.0)	2(0.8)	106(40.9)	29(11.2)	9(3.5)	$X^2(25)=57.24$ $V^2 = .16$ Sig=.000
	Photography	9(19.1)	13(27.70	1(2.1)	17(36.2)	6(12.8)	1(2.1)	
	Browsing and entertainment	6(11.1)	20(37.0)	1(1.9)	19(35.2)	2(37.0)	6(11.1)	
	Media and news	2(6.7)	16(53.3)	.0	9(30.0)	3(10.0)	.0	

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Applications	Educational and scientific	3(6.5)	17(37.0)	6(13.0)	18(39.1)	2(4.3)	.0	
	Cooking and decorating	3(18.8)	7(43.8)	1(6.3)	21(2.5)	3(18.8)	.0	
	Telegram	11(11.2)	28(28.6)	2(2.0)	44(44.9)	7(7.1)	6(6.1)	$X^2(45)=46.22$
	WhatsApp	22(13.3)	57(43.3)	1(6.0)	59(35.5)	21(12.7)	6(37.5)	
	Facebook	.0	6(33.3)	1(5.6)	9(50.0)	2(11.1)	.0	Sig=.23
	Youtube	.0	.0	.0	3(100.0)	.0	.0	
	Twitter	11(4.3)	4(57.1)	.0	1(4.3)	.0	1(6.3)	
	Instagram	17(13.9)	43(35.2)	5(4.1)	39(32.0)	15(12.3)	3(18.8)	
	Webs	1(6.7)	7(46.7)	2(13.3)	5(33.3)	.0	.0	
	News sites	1(5.3)	10(52.6)	.0	8(42.1)	.0	.0	
	Offline games	.0	1(25.0)	.0	3(75.0)	.0	.0	
Ch ec kin	0-5	26(17.0)	58(37.9)	5(3.3)	55(35.9)	8(5.2)	1(0.7)	$X^2(30)=141.85$

Duration of owning phone	10-30	11(9.3)	33(28.0)	3(2.5)	55(46.6)	16(13.6)	.0	
	30-60	6(5.4)	47(42.3)	2(1.8)	41(36.9)	6(5.4)	9(8.1)	$V^2 = .25$
	60-120	9(17.6)	13(25.5)	1(2.0)	16(31.4)	10(19.6)	2(3.9)	
	120-180	1(7.1)	3(21.4)	.0	4(28.6)	5(35.7)	1(7.1)	Sig=.000
	180-240	.0	2(100.0)	.0	.0	.0	.0	
	240+	.0	.0	.0	.0	.0	3(100.0)	
	5≥	9(9.8)	31(33.7)	2(2.2)	38(41.3)	10(10.9)	2(2.2)	$X^2(15)=11.90$
	5 - 10	32(11.4)	96(34.3)	8(2.9)	111(39.6)	24(8.6)	9(3.2)	Sig=.69
	10-15	10(14.9)	24(35.8)	1(1.5)	19(28.4)	8(11.9)	5(7.5)	
	15+	2(15.4)	5(38.5)	.0	3(23.1)	3(23.1)	.0	

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According to the table 4, the participants, who used to check their smartphones two or more hours before bedtime and delay their sleep, represented vulnerability to all three levels of PSU. Investigating the prevalence of PSUs, considering the women's interest in the applied fields and programs of smartphones, revealed that most of the participants used smartphones for communication, browsing and entertainment, and photography. More of them showed a slight level of PSU; however, they were mostly at the normal or very normal levels in other dimensions. The findings also revealed that WhatsApp was the most popular application for the respondents, with 35.5%, 12.7%, and 37.5% of the women at the slightly, moderately, and highly PSU levels. In this regard, Instagram and Telegram were the next most popular applications, respectively. Regarding the participants' goals and motivation, communication goals and communication applications were detected to be the risk factors of PSU.

Problematic Smartphone Use (PSU) and predictors (Loneliness, marital satisfaction and some of the demographic charastrics)

Table 5 shows the correlation matrix between the research variables and each variable's mean and standard deviation. For the quantitative variables mean and standard deviation were calculated.

Tables 6 and 7 show the results of stepwise regression to answer the second research question.

The normality assumption was observed regarding the multiple regression assumptions since the research variables' skewness and kurtosis ranged from -2 to +2 (Levin & Rubin, 1998).

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Table 5

Pearson Correlation Coefficients Between PSU, and Assessed Variables, and Their Descriptive Statistics

	variable	1	2	3	4	5	6	7	8	9
1	PSU	1								
8	Lonelines	.22**	.20**	.14**	.14**	-.09*	-.07	.04	1	
9	Marital	-.13**	-.12*	-.12*	-.05	-.16**	-.15**	-.12*	-.37	1
	M±S_D	31.42±	16.24±	8.09±2.	7.09±2.	37±10.	13.74±1	1.28±0.	35.56±10	16.59±

**: P≤ .01, *: P≤.05, PSU: Problematic Smartphone Use, M±S_D : mean ± standard deviation

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Table 6

Model Summary of Stepwise Regression Predicting PSU

Variable	R	R^2	Adj.R^2	Std. E.E	Δ R^2	ΔF	df1	df2	Sig.Δ F	Durbin-Watson
Loneliness	.22	.05	.05	6.58	.05	22.26	1	450	.000	.42
Loneliness Duration of the marriage	.29	.08	.08	6.46	.04	18.29	1	449	.000	
Loneliness Duration of the marriage Marital satisfaction	.31	.09	.09	6.4	.009	4.45	1	448	.04	

Model 3 of ANOVA		Sum of Squares	df	Mean Square	F	Sig.	Dependent variable: Problematic mobile phone use
	Regression	1911.83	3	637.28	15.39	.000	
	Residual	18552.15	448	41.41			Predictors: (Constant), Loneliness, Marital length, Marital satisfaction
	Total	20463. 97	451				

Table 7

Coefficients of Stepwise Regression Predicting PSU

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Correlations			Collinearity statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	26.55	1.08	-	24.65	.000	-	-	-	-	-
	Loneliness	0.14	0.03	.22	4.72	.000	.22	.22	.22	1.00	1.00
2	(Constant)	28.57	1.16	-	24.67	.000	-	-	-	-	-
	Loneliness	0.13	0.03	.20	4.52	.000	.22	.21	.20	0.99	1.00
	Duration of the marriage	-0.13	0.03	-.19	-4.28	.000	-.21	-.20	-.19	0.99	1.00
3	(Constant)	32.34	2.13	-	15.20	.000	-	-	-	-	-
	Loneliness	0.10	0.03	.17	3.37	.001	.22	.16	.15	0.85	1.18
	Duration of the marriage	-0.14	0.03	-.21	-4.61	.000	-.21	-.21	-.21	0.96	1.04
	Marital satisfaction	-0.16	0.08	-.10	-2.11	.040	-.13	-.01	-.09	0.83	1.20

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As shown in the Tables 6 and 7, the Tolerance and VIF indices are in the desired range, indicating the observance of the nonlinearity of the predictor variables assumption. Moreover, the *Durbin–Watson* statistic is .42 (in the range of 1.5 -2.5), suggesting that the assumption of the independence of errors is also met. As presented in Table 6, loneliness, duration of marriage, and marital satisfaction could significantly explain .09 of the PSU variances (R^2 = .09, F = 4.45, p = .04). Moreover, the proposed mixed model was statistically significant (F = 15.39, p = .000), indicating that a combination of the three predictor variables (namely loneliness, marital length, and marital satisfaction) could predict PSU variance by 0.09%. More importantly, according to the table 7, marital satisfaction significantly negatively affected PSU, suggesting that PSU increased by .10 units per unit of decrease in marital satisfaction. The impact of loneliness on PSU was also significant (Beta = .17, t = 3.37, p = .001), indicating that PSU increased by .17 units per unit of decrease in loneliness. Table 7 suggests that low marital satisfaction was a negative PSU predictor among Iranian women and the women's loneliness was a positive PSU predictor. In general, the two variables above were the PSU risk factors. Further, the duration of marriage also had a significant negative effect on PSU (Beta = -.21, t = -4.61, *p* =.000). To sum up, the three variables played roles in predicting PSU.

Discussion

To the best of the researcher’s knowledge, no study has examined how Iranian women use their smartphones and PSU among women; hence, the present study investigated the different aspects of smartphone use, PSU prevalence, and predictors among Iranian women for the first time.

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The first research question in the current study was: What are the main usages of smartphone among Iranian married women? Regarding the attractions of the smartphone for the Iranian women in this study, which made them extremely involved in using smartphones, and there was high interest in applied communication. According to the findings, more than half of the women (57.2%) reported using smartphones not only for calling but also for communication or socialization. The point was also observed in terms of their favorite applications. Also, 85.1% of Iranian women spent more time working with multimedia messaging applications, including WhatsApp, Telegram, and Instagram, than other applications such as Twitter or online games. Other research revealed that female individuals use their smartphones to spend considerable time working on social networks and entertainment applications (Taywade & Khubalkar, 2019), communication (Roberts, Yaya & Manolis, 2014), socialize through virtual social webs, send messages, expand interpersonal relationships, and collect information (Anshari et al., 2016), communicate and send a message (Hawi, 2012) and mostly hold and keep emotional communication (Lin et al., 2014). Then the women mostly spend their time on communication and messaging applications. It implies that smartphones for Iranian women are tools to create, maintain, and expand interpersonal relations and that they mainly focus on applications and their communication options.

The second research question in the current study was: How prevalent is PSU among married Iranian women? Among the Iranian women aged 18-65, 37.8%, 10%, and 3.5% used smartphones at slightly, moderately, and highly problematic levels, respectively. Compared to the other studies on the prevalence of PSU in different adult samples, the prevalence among the Iranian women in the present study was lower. The

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prevalence of PSU among adults in some other studies was as follows: 29.8% (Chen et al., 2017), 26.2% (Tao et al., 2016), 38.5% (Luk et al., 2018), 21.3% (Long et al., 2016).

As the present study showed, the participants, who used to check their smartphones two or more hours before bedtime and delay their sleep, represented vulnerability to all three levels of PSU. Investigating the prevalence of PSUs, considering the women's interest in the applied fields and programs of smartphones, revealed that most participants used smartphones for communication, browsing and entertainment, and photography. More of them showed a slight level of PSU; however, they were mostly at the normal or very normal levels in other dimensions. The findings also revealed that WhatsApp was the most popular application for the respondents, with 35.5%, 12.7%, and 37.5% of the women at the slightly, moderately, and highly PSU levels. In this regard, Instagram and Telegram were the next most popular applications, respectively. Regarding the participants' goals and motivation, communication goals and communication applications were detected to be the risk factors of PSU.

In general, relationship motivation (i.e., motivation to establish personal relationships) promotes individuals' desire to use smartphones (Liu & Yu, 2011); hence, due to their strong motivations to communicate, women use smartphones to establish social relations with a focus on messaging and social networks (Gutiérrez et al., 2016; Chen et al., 2017). Since the most problematic applications are the ones used for voice calls, text messages, and social networks (Roberts et al., 2014) and spending more time on social media is a PSU risk factor (Tugtekin et al., 2020), smartphone use may be problematically prevalent among Iranian women. Seemingly, women, especially

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Eastern women, use smartphones for socialization. As such, smartphones are a simple and easy technique for women to connect with others and the outside world.

In this study, the first hypothesis was to investigate the predicting role of loneliness for PSU. According to the findings this hypothesis was approved and loneliness could explain and predict PSU. Loneliness plays a role in arousing PSU because individuals need to establish relationships. Different factors can produce the feeling of loneliness. For example, People who do not have adequate social interactions and spend more time at home doing other activities, such as computer-based work, instead of going to nature (e. g. parks) or participating in group work, clubs, and so on, feel more loneliness (MacDonald, Willemsen, Boomsma & Schermer, 2020). This issue is likely to be more highlighted in Eastern societies for Eastern women, where women are much more restricted regarding entertainment and recreation spaces and mainly play traditional female roles (e.g., housekeeping, childbearing, etc.), as such a large group of women are limited to their houses and have higher levels of loneliness. In these societies, despite increasing educational and occupational opportunities for women, even educated ones are limited because of the traditional-cultural factors, are not provided with sufficient attending and participating possibilities in activities run in the society, and are prohibited from advancing professionally under the barrier glass ceiling. Consequently, these women feel further loneliness and need to spend extra time in the virtual world.

On the other hand, inadequate emotional bonds to the spouse and low-level emotional attachment to the family and friends produce loneliness (Yang & Bath, 2018). This makes these individuals mentally and psychologically feel a lack of pleasant social relations. It seems that communication skills are the heart

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of the quality of social interactions and close bonds and play a role in the level of loneliness and self-esteem, being eager to receive others' approval, the sense of belonging, and the use of the social, mobile application (Chen, 2020). In fact, Individuals having poor communication skills may experience unpleasant behaviors, including rejection by peers. Accordingly, they would have unpleasant feelings aroused by unsuccessful interpersonal relations and rejection by the group (Yılmaz, Kırımoğlu, & Soyer, 2018) as well as anxiety, which would ultimately result in their inclination to online social interactions increasingly (Chen, 2019).

On the one hand, avoidance of the negative consequences of poor social skills and the negative perceptions of social skills or non-matching with others provokes them into PSU (Lodder, Goossens, Scholte, Engels & Verhagen, 2016). On the other hand, they actively participate in virtual social networks and enjoy many online audiences to meet their need for further social relations and compensate for the unpleasant feeling aroused by the lack of such relations (Hood, Creed & Mills, 2017). They communicate simply using the interactive context of the Internet and get involved in an intimate and conductive atmosphere to express their feelings. These users influence each other, raise their needs and problems, and spend their affective energy on the Internet context using their smartphones (Pusey, 1987). Hence, loneliness makes users be involved in cyberspace to meet the need for acceptance from others to establish or maintain the interpersonal relations they need and to address the need to express their feelings (Pawlowska & Potembska, 2011). Accordingly, PSU behaviors can be aroused by increased loneliness and efforts to meet communication needs.

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Another significant PSU predictor was marital satisfaction. The second hypothesis was approved and marital satisfaction could explain and predict PSU. Marital satisfaction is a multi-dimentional concept. It seems that in parallel with the current research, interactions with spouses and sexual satisfaction are more considerable. Because interpersonal communication skills, social skills, and conflict resolution are key factors in sexual satisfaction. These skills cause women to experience higher self-esteem, self-confidence, more acceptable self-concept, and consequently appropriate level of sexual intimacy (Yoo, Bartle-Haring, Day, & Gangamma, 2014). Sexual satisfaction and related problems are key aspects of marital satisfaction, which is influenced by various factors such as mode of marriage (Yasan & Gürgen, 2008), racial, ethnical, religious, cultural beliefs and attitudes, traditional contexts, sociocultural taboos, and misunderstanding of sexuality (Ruiz-Muñoz, Wellings, Castellanos-Torres, ÁlvarezDardet, Casals-Cases, Pérez, 2013). Additionally, sexual satisfaction is influenced by various factors such as mode of marriage (Yasan & Gürgen,), racial, ethnical, religious, cultural beliefs and attitudes, traditional contexts, sociocultural taboos and misunderstanding of sexuality (Ruiz-Muñoz, Wellings, Castellanos-Torres, ÁlvarezDardet, Casals-Cases, Pérez, 2013). Probably, traditional and religious-cultural beliefs, particularly in Eastern societies such as Iran, prevent women from talking about sexual subjects, attempting to obtain knowledge on appropriate sexual relations and required skills. Hence this inadequate knowledge can affect their sexual satisfaction negatively (Yoo, Bartle-Haring, Day & Gangamma, 2014), and reduce their intimity and marital satisfaction. A low level of marital satisfaction is associated with higher levels of stress and anxiety (Shackelford, Besser & Goetz, 2008). As a result, the individuals to avoid such psychological problems, get

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a kind of avoidance motivation for the tendency to PSU (Park & Lee, 2012). In an attempt to make the perceived stress less, the individual tends to seek online support and, consequently, problematic use of a smartphone. The less perceived social support in the real world, the more tendency to PMC (Zhao, Xu, Lai, Yang, Tu, Ding, Lv & Zhang, 2021). If couples fail to provide each other's affective, sexual, and social intimacy, their participation in virtual social networks might be an alternative to their real relations (Tariq & Irfan, 2019). In other words, when individuals are unsatisfied with their marital life and relationship with their spouse, they are more inclined to use smartphones and establish social and close relationships via social networks.

The findings indicate that PSU decreases with aging and a longer duration of marriage, implying that aging reduces the likelihood of dangerous smartphone use (Kaviyani et al., 2020). As Lee and Fung (2011) documented, with an increase in marriage, older couples further concentrate on the real and practical quality of marriage, companionship, sympathy, and empathy in their marital life. In other words, the couple's emotional dependency increases, and they experience promoted quality of marital life (Robles et al., 2014). Hence, this group of couples is likely to prefer real communication to virtual ones and thus are less likely to experience PSUs. Accordingly, given that emotional and affective instability and psychosocial problems make individuals look for emotional and social support, compensate for life dissatisfaction via virtual social networks and online communication, and replace their failed relations in the real world with those on online social networks (Tariq & Irfan, 2019), the quality of marital life for middle-aged and older couples probably prevents them from further engagement in cyberspace.

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Research Limitations and Future Research

The present study mainly aimed to examine the PSU prevalence and its significant predictors among Iranian women, even though the study suffered from some limitations. First, reviewing the research literature of PSU was challenging due to the ambiguous terminology for this term. Accordingly, future studies are recommended to examine this concept's theoretical and conceptual foundations. Second, given that PSU is a cultural and technological phenomenon that changes over time and differentiates different social groups and communities, the generalizability of the present findings should be done cautiously. The findings from the current study are based on a convenience sample and may result from a volunteer bias. Therefore, the sample may not be representative of the general Iranian women. Although, considering that we wanted to cover a diversity of married women based on the research variables, such as education level and job (as some proposed predictors) the best way to conduct the questionnaires was online form and inviting people to participate. Then caution is needed while generalizing. The other limitation was the use of self-reported means that is subject to bias (Budd, 1987). However, according to our aim and online research method, it was the only possibility. In future research other methods such as interviews to get objective information is suggested. The other limitation was that this study is a cross-sectional study. Because longitudinal research provides more information about causal relationships between variables in the model, it is suggested that future research be conducted longitudinally to examine research relationships.

Considering the results from the view of the CIUT, it is revealed that apparently, based on the applications they prefered most, the internal need of females to make social relationships has led them to have social motives more than process motives to

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escape from the unpleasant feelings due to loneliness and low marital satisfaction. Our research could probably be repeated in future research to explain PSU among adult and married women in terms of structured equation modeling based on CIUT to find out what exactly their motivation for using smartphones excessively is.

The psychological variables predicting PSU among married individuals, especially women should be further examined regarding the increasing dependency on smartphones in all social groups and strata. This issue is paramount since mothers' dependency on this tool may provide a behavioral model for children and other family members.

It is concluded that half of the married women aged 18-65 years in Iran experience different levels of PSU; hence, PSU should be examined as a public health issue among women. The present study also documented that smartphones make individual's social relations meaningful in an individualized network context in addition to establishing independent personal privacy. They also prepare the conditions for the self-expression of identity and individualism. From another perspective, given that smartphones always accompany individuals everywhere, they can use them less expensively and more broadly to eliminate their loneliness and social isolation, thereby promoting affective dependency (Billieux et al., 2008).

The findings of this study from a sample of Iranian married women have expanded new horizons in the form of prevention and control policies and principles. To mention an example, the present findings explain how smartphone use is problematic if smartphones address marital life's problems and dissatisfaction or resolve the negative affections and the unpleasant feelings of loneliness. Accordingly, these findings can be adopted to develop

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prevention actions to remove the PSU risk factors and promote factors decreasing such behaviors. Moreover, the present study documented the negative relationship between the duration of marriage and PSU. According to a study of Korporaal, van Groenou, & van Tilburg's (2013), compared to men, women are more vulnerable to their husbands' health problems, which may affect their marital satisfaction. On the other hand, their intimate marital relations can improve the quality of their marital life and their marital satisfaction, and consequently their psychosocial health. In this regard, assuming high marital quality and intimate relationships, the longer duration of marital life can prevent the couple's tendency to engage problematically in cyberspace.

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