

ZAVISNOST OD „PAMETNIH“ TELEFONA

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SAŽETAK

Broj korisnika pametnih telefona (smartfona, engl. *smartphone*) širom sveta danas premašuje tri milijarde i predviđa se dalji rast od nekoliko stotina miliona u narednih nekoliko godina. Razvoj multifunkcionalnih pametnih telefona i njihova primena promenili su način komuniciranja i informisanja, ali i doveli do zabrinutosti zbog njihove prekomerne upotrebe i zavisnosti. Poslednjih godina, istraživanja zavisnosti od pametnih telefona su u porastu. Paralele između prekomerne upotrebe pametnih telefona i bihevioralne zavisnosti česte su u israživanjima. Prema mnogim autorima „zavisnost od pametnih telefona“ može se smatrati bihevioralnom zavisnošću. Postoje dokazi za postojanje strukturnih i funkcionalnih promena u mozgu, karakterističnim za bihevioralne zavisnosti, kod osoba koje ispunjavaju psihometrijske kriterijume za „zavisnost od pametnih telefona“. Neki autori čak predlažu kriterijume za dijagnozu zavisnosti od pametnih telefona. S druge strane, neki autori smatraju da korišćenje termina „zavisnost“ može pogrešno predstaviti težinu poremećaja, te stoga predlažu korišćenje termina „problematična upotreba pametnih telefona“. Zbog rastuće zabrinutosti oko prekomernog korišćenja pametnih telefona, dosta se radi na prepoznavanju i proceni problematične upotrebe pametnih telefona, uglavnom kroz razvoj i primenu skala za procenu ponašanja. Ove skale su posebno razvijene i validirane za identifikovanje problematične upotrebe pametnih telefona ili za dijagnostikovanje osoba sa zavisnošću od pametnih telefona, prekomernom upotrebom, preteranom vezanošću za telefon isl. Međutim, i pored toga što je većina ovih skala osmišljena sa namerom da se u budućnosti koriste za kliničke svrhe, problematična upotreba pametnih telefona kao vrsta zavisnosti ne nalazi se u Međunarodnoj klasifikaciji bolesti, te se skale još uvek koriste samo u istraživačke svrhe. Upotreba termina „problematična upotreba pametnih telefona“ i „zavisnost od pametnih telefona“, različiti metodološki pristupi koji se koriste u izučavanju, kao što je primena različitih skala i nedostatak standardizovanih dijagnostičkih kriterijuma, otežavaju definisanje „zavisnosti od pametnih telefona“. Sve to ide u prilog činjenici da je „zavisnost od pametnih telefona“ kompleksan fenomen koji zahteva dodatna istraživanja.

Ključne reči: zavisnost, pametni telefoni, problematična upotreba telefona

Uvod

Broj korisnika pametnih telefona (smartfona, engl. *smartphone*) širom sveta danas premašuje tri milijarde i predviđa se dalji rast od nekoliko stotina miliona u narednih nekoliko godina. Kina, Indija i Sjedinjene Američke Države su zemlje sa najvećim brojem korisnika smartfona, sa ukupno 1,46 milijardi korisnika (1). Mobilni telefoni nisu više namenjeni samo komunikaciji između dve osobe. Najnovije generacije mobilnih telefona (pametni telefoni, smartfoni) imaju mnoge funkcije kao i računari, ekran osetljiv na dodir (engl. *touchscreen*), pristup Internetu, i operativni sistem sposoban za pokretanje različitih aplikacija (2). Omogućavaju ljudima širok spektar *online*

aktivnosti, kao što su surfovanje internetom, email, video igrice, kockanje, pristup društvenim mrežama (*Facebook, Twitter, Instagram...*). Razvoj multifunkcionalnih pametnih telefona i njihova primena promenili su način komuniciranja i informisanja, ali i doveli do zabrinutosti zbog njihove prekomerne upotrebe i zavisnosti. Nije samo rasprostranjena upotreba tehnologije ono što izaziva zabrinutost, već potencijalne negativne posledice povezane sa korišćenjem pametnih telefona, zbog čega istraživači naglašavaju važnost istraživanja ovog ponašanja. Bez obzira na to što „zavisnost od pametnih telefona“ još uvek nije prepoznata u psihijatrijskim vodičima, mnoge studije beleže visoku

SMARTPHONE ADDICTION

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SUMMARY

The number of smartphone users worldwide exceeds three billion today and further growth of several hundred million is projected over the next few years. The development of multifunctional smartphones and their use have changed the way of communication and information, but also led to concerns about their excessive use and dependence. In recent years, research on smartphone addiction has been on the rise. Parallels between excessive smartphone use and behavioral addiction are common in research. According to many authors, "smartphone addiction" can be considered a behavioral addiction. There is evidence for structural and functional changes in the brain, characteristic of behavioral addictions, in people who meet the psychometric criteria for "smartphone addiction." Some authors even suggest criteria for diagnosing smartphone addiction. On the other hand, some authors believe that the use of the term "addiction" can misrepresent the severity of the disorder, and therefore suggest the use of the term "problematic smartphone use". Due to growing concerns about the excessive use of smartphones, much is being done to identify and assess problematic smartphone use, mainly through the development and application of behavioral assessment scales. These scales are specially developed and validated to identify problematic smartphone use or to diagnose people with smartphone addiction, overuse, excessive phone attachment, etc. However, despite the fact that most of these scales are designed to be used for clinical purposes in the future, the problematic use of smartphones as a type of addiction is not in the International Classification of Diseases and these scales are still used only for research purposes. The use of the terms "problematic smartphone use" and "smartphone addiction", different methodological approaches used in the study, such as the application of different scales and the lack of standardized diagnostic criteria, make it difficult to define "smartphone addiction". All this supports the fact that "smartphone addiction" is a complex phenomenon that requires additional research.

Key words: addiction, smartphone, problematic smartphone use

Introduction

The number of smartphone users worldwide surpasses three billion today and is forecast to further grow by several hundred million in the next few years. China, India and the United States of America are the countries with the highest number of smartphone users with 1.46 billion users (1). Mobile phones are not only designed for the communication between two persons. The latest generations of smartphones have some of the functions of a computer, such as a touch screen, the access to the Internet, and the operating system that can run different applications (2). They cover a wide range of online activities, such as surfing the Net, e-mail, video games, gambling, the access to social networks (Facebook, Twitter,

Instagram...). The development of multifunctional smartphones and their use have changed the way of communication and information, and also led to concerns about their excessive use and dependence. The excessive use of technology is not the only issue that causes concerns, but potential negative consequences associated with the overuse of smartphones, and therefore, researchers emphasize the importance of investigating this behavior. Although smartphone addiction has not been recognized in psychiatric manuals yet, many studies have registered a high prevalence of smartphone addiction, from 16.9% in Switzerland to 38.5% in China (3).

prevalenciju zavisnosti, od 16,9% u Švajcarskoj, do čak 38,5% u Kini (3).

Problem u definisanju „zavisnosti od pametnih telefona“

Američko udruženje psihijatarata (APA) definiše zavisnost i zloupotrebu supstanci, u širem smislu, kao složeno stanje koje se manifestuje nekontrolisanom upotrebom psihoaktivnih supstanci uprkos štetnim posledicama (4). Prema ovoj definiciji, da bi osoba bila „zavisnik“, neophodno je da konzumira određenu psihoaktivnu supstancu od koje je zavisna. Međutim, Dijagnostički i statistički priručnik za mentalne bolesti Američkog udruženja psihijatarata (DSM-5) (5) i Međunarodna klasifikacija bolesti (MKB-11) Svetske zdravstvene organizacije (6) prepoznaju kategorije bihevioralne zavisnosti. Bihevioralne zavisnosti su nesupstancijalne zavisnosti, ponavljano ponašanje koje ima negativne posledice (7). Prema najnovijoj kategorizaciji bolesti zavisnosti u DSM-5, kockanje je prepoznato kao nesupstancijalni poremećaj zavisnosti kao zaseban klinički entitet u kategoriji „*Substance-Related and Addictive Disorders*“ (5). Pored toga, i zavisnost od igranja igrice na internetu (engl. *internet gaming disorder*) uključena je u DSM-5 kao stanje koje je potrebno dodatno istražiti (engl. *conditions for further study*) (5). I kockanje, i zavisnost od igranja igrice na internetu, zajedno su grupisani u MKB-11, što sugeriše da su bihevioralne zavisnosti slične poremećajima upotrebe supstanci. Međutim, ni DSM-5 ni MKB-11 još uvek ne pominju zavisnost od mobilnih i pametnih telefona. Ipak, poslednjih godina, istraživanja zavisnosti od pametnih telefona su u porastu (8–15) i čini se da postoji tendencija da se navike u korišćenju popularne tehnologije okarakterišu kao zavisnost.

Prema MKB-11, glavne odlike zavisnosti od psihoaktivnih supstanci su snažan unutrašnji nagon za korišćenjem supstance, uz odsustvo samokontrole korišćenja, i da korišćenje supstance ima prioritet u odnosu na druge aktivnosti uprkos štetnim posledicama. Za bihevioralne zavisnosti predlažu se dve komponente: značajan poremećaj funkcionisanja ili distres kao posledica ponašanja i trajanje tokom vremena (7). Stoga, iz više različitih izvora može se izvući sumarna teorijska definicija zavisnosti, sa dve ključne komponente: a) (ozbiljne) negativne posledice ili oštećenje i b) psihološka (žudnja, preokupiranost i gubitak kontrole) i

fiziološka (tolerancija i apstinencijalni sindrom) zavisnost koji navode osobu da nastavi sa takvim ponašanjem (18).

Griffiths definiše zavisnosti od tehnologije kao nehemijske (bihevioralne) zavisnosti koje podrazumevaju interakciju ljudi i mašina (16). Stav ovog autora je da su tehnološke zavisnosti podskup bihevioralne zavisnosti i da su komponente bihevioralne zavisnosti ključne komponente tehnološke zavisnosti (preokupiranost, poremećaj raspoloženja, tolerancija, apstinencijalni sindrom, konflikt i relaps) (16). Preokupiranost podrazumeva da određena aktivnost postane najvažnija aktivnost u životu osobe i okupira njeno razmišljanje. Poremećaj raspoloženja se odnosi na to da konzumiranje psihoaktivne supstance, ili obavljanje određenje aktivnosti, može imati različite efekte na raspoloženje. Tolerancija podrazumeva da su potrebne sve veće količine supstance ili aktivnosti da bi se postigli raniji efekti. Neprijatna osećanja ili fizički efekti do kojih dolazi kada se prekine sa određenom aktivnošću predstavljaju apstinencijalni sindrom. Konflikt se odnosi na konflikt između zavisnika i njegove okoline – interpersonalni, i unutar same individue – intrapsihički konflikt. Relaps znači vraćanje ranijim obrascima ponašanja nakon duže apstinencije. Prema *Griffiths*-u zavisnost je biopsihosocijalni proces, i nije ograničena samo na konzumiranje droga, odnosno zavisnička ponašanja imaju mnogo sličnosti, što može ukazati na njihovu zajedničku etiologiju. Te zajedničke osobine mogu imati uticaj ne samo na tretman zavisničkih ponašanja, već i na to kako ih šira javnost percipira (17).

Paralele između prekomerne upotrebe pametnih telefona i bihevioralne zavisnosti česte su u israživanjima (8,9,19). Pojam „zavisnost od pametnih telefona“ je uveden kako bi opisao prekomerno i psihosocijalno disfunkcionalno korišćenje pametnih telefona koje podseća na bihevioralne zavisnosti (8). *Lin* i saradnici, čak idu toliko daleko da predlažu dijagnostičke kriterijume za postavljanje dijagnoze „zavisnosti od pametnih telefona“ (19). Dijagnostički kriterijumi podeljeni su u tri dela: prvi deo (kriterijumi A) sastoji se od simptoma zavisnosti od pametnih telefona (nedostatak samokontrole po pitanju korišćenja, apstinencijalni sindrom, korišćenje telefona duže nego što su nameravali, i korišćenje uprkos negativnim posledicama), drugi deo (kriterijumi B) opisuje funkcionalna oštećenja koja nastaju kao posledica korišćenja pametnih

The problem of defining 'smartphone addiction'

The American Psychiatric Association (APA) defines addiction and substance abuse, in a broader sense, as a complex condition in which there is an uncontrolled use of psychoactive substances despite harmful consequences (4). According to this definition, it is necessary that a person uses certain psychoactive substances in order to be an "addict". However, the Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association (DSM-5) (5) and the International Classification of Diseases (ICD-11) of the World Health Organization (6) recognize the categories of behavioral addiction. Behavioral addictions are non-substance addictions, the repetitive behavior that has negative consequences (7). The reclassification of addictive disorders in DSM-5 recognizes gambling, which has been studied most and which is similar to psychoactive substance dependence, as a non-substance disorder and it was included in the new DSM-5 classification as a separate clinical entity in the category "Substance-Related and Addictive Disorders" (5). In addition, internet gaming disorder was also included in the DSM-5 as a condition for further study (5). Both gambling and internet gaming disorders were included in the ICD-11, which suggests that behavioral addictions are similar to substance use disorders. However, cell phone and smartphone addiction have not been mentioned in the DSM-5 and ICD-11 yet. Although research on smartphone addiction has been on the rise in recent years (8-15), it seems that habits of using popular technology tend to be characterized as an addiction.

According to the ICD-11 draft, the main characteristics of psychoactive substance dependence are the strong internal drive to use the substance coupled with the lack of self-control, and increasing priority is given to using the substance than doing other activities despite harmful consequences. Two components are proposed for behavioral addiction: a significant functional impairment or distress as a consequence of the behavior and persistence over time (7). Therefore, a brief theoretical definition of dependence can be summarized from different sources, by two key components: a) (severe) negative consequences or impairment and b) psychological (craving, salience

and loss of control) and physiological dependence (tolerance and withdrawal) that leads one to carry on the behavior (18).

Griffiths defines technological addictions as non-chemical (behavioral) addictions which involve the human-machine interaction (16). This author states that technological addictions are a subgroup of behavioral addictions and that components of behavioral addiction are key components of technological addiction (salience, mood modification, tolerance, withdrawal, conflict and relapse) (16). Salience is when the activity in question becomes the most important activity to the user and dominates their thinking. Mood modification means that the psychoactive substance use or certain activities may have different effects on the mood. Tolerance means increasing amounts of psychoactive substances or activities to achieve the former effects. Unpleasant feelings or physical effects, which occur when the particular activity is discontinued, represent withdrawal or abstinence syndrome. Conflict refers to the conflict between the addict and those around them – interpersonal, and from within the individual themselves – intrapsychic. Relapse is returning to previous patterns of behavior after long abstinence. According to Griffiths, addiction is a biopsychosocial process, and it is not limited only to the ingestion of drugs, that is, addictive behaviors have a lot of commonalities, which may point to their common etiology. These commonalities may have implications not only for the treatment of addictive behaviors, but also for how the general public perceives such behaviors (17).

Parallels between the excessive use of smartphones and behavioral addiction are common in studies (8,9,19). The term "smartphone addiction" was introduced to describe the excessive and psychosocial dysfunctional use of smartphones which reminds of behavioral addictions (8). Lin and associates even suggest diagnostic criteria for diagnosing smartphone addiction (19). Diagnostic criteria are divided into three groups: 1) the first criteria (A) consist of symptom criteria regarding smartphone addiction (lack of self-control in terms of using, abstinence syndrome, using the phone longer than they intended, and using the phone despite negative consequences); 2) the second group of criteria

telefona (fizički ili psihološki problem, korišćenje telefona u rizičnim situacijama, uticaj na socijalne odnose, uspeh u školi ili na poslu), i treći deo (kriterijumi C) su kriterijumi isključenja (kako bi se isključile manične epizode ili opsesivno-kompulzivni poremećaj). Prema njihovim rezultatima karakteristike zavisnosti od pametnih telefona se u velikoj meri preklapaju sa zavisnošću od psihoaktivnih supstanci i bihevioralnim zavisnostima. Jedinstvenost pametnih telefona, pre svega pristup internetu i raznim aplikacijama, doprinose raširenom zavisničkom ponašanju. Štaviše, studija *Horvath*-a i saradnika (20) pruža dokaze za različite strukturne i funkcionalne promene, odnosno neuronske mehanizme, specifične za bihevioralne zavisnosti, kod osoba koje zadovoljavaju psihometrijske kriterijume za zavisnost od pametnih telefona. S obzirom na njihovu široku upotrebu, dovodi se u pitanje njihova neškodljivost, pogotovo kod pojedinaca koji su pod povećanim rizikom da razviju zavisničko ponašanje.

S druge strane, *Carbonell* i *Panova* (18) smatraju da su problemi povezani sa konceptualizacijom i prihvatanjem tehnoloških zavisnosti u velikoj meri vezani za terminologiju. „Zavisnost od pametnih telefona” svakako nije ozbiljna i teška, i sa takvim zdravstvenim posledicama kao što su to zavisnosti od duvana ili heroina. Međutim, ne postoji drugi prihvaćen termin za ponašanje koje se ispoljava nedostatkom samokontrole, vezanošću, prekomernom upotrebom i negativnim posledicama. Stoga, u nedostatku boljeg termina, „zavisnost” je postala krovni termin za takva ponašanja. Autori smatraju da korišćenje termina „zavisnost” može pogrešno predstaviti težinu poremećaja te stoga predlažu korišćenje termina „problematična upotreba pametnih telefona”.

Billieux je definisao problematičnu upotrebu mobilnih telefona kao „nemogućnost da se kontroliše korišćenje mobilnog telefona, što na kraju dovodi do negativnih posledica u svakodnevnom životu” (21). Brojne studije koje ukazuju da je upotreba pametnih telefona povezana sa različitim aspektima disfunkcije, podržavaju koncept problematične upotrebe pametnih telefona zavisno od negativnih posledica upotrebe. Studije su pokazale značajnu povezanost socijalnih, interpersonalnih, i akademskih disfunkcija, kao i mentalnog zdravlja, što pokazuje da korišćenje pametnih telefona može imati negativne posledice za određene osobe (21).

Skale za merenje „problematične upotrebe pametnih telefona” i „zavisnosti od pametnih telefona”

Zbog rastuće zabrinutosti oko prekomernog korišćenja pametnih telefona, dosta se radi na prepoznavanju i proceni problematične upotrebe pametnih telefona, uglavnom kroz razvoj i primenu skala za procenu ponašanja. *Haris* i saradnici (22) su u svom preglednom radu obuhvatili čak 78 skala. Ove skale su posebno razvijene i validirane za identifikovanje problematične upotrebe pametnih telefona ili za dijagnostikovanje osoba sa zavisnošću od pametnih telefona, prekomernom upotrebom, preteranom vezanošću za telefon i sl. Iako se konstrukt koji ove skale mere može razlikovati, mnoge su slične u svojoj teorijskoj osnovi, čak i u stavkama koje sadrže. Najčešće su DSM kriterijumi za zavisnost od psihoaktivnih supstanci korišćeni kako bi se kreirale stavke u skalama, da bi se procenila „zavisnost”. Kako su se mobilni telefoni razvijali u pametne telefone, termini mobilni telefon i pametni telefon su se često, u studijama, koristili sa istim značenjem. Međutim, s obzirom da pametni telefoni imaju znatno više komponenata i funkcija nego mobilni telefoni, skale su često ažurirane i prilagođavane specifičnostima pametnih telefona. Mi ćemo se osvrnuti na nekoliko skala koje su najčešće korišćene za procenu problematične upotrebe ili „zavisnosti” od pametnih telefona.

Skala zavisnosti od pametnih telefona (Smartphone addiction scale – SAS) i Skala zavisnosti od pametnih telefona – Skraćena verzija (Smartphone addiction scale – Short version– SAS-SV)

Kwon i saradnici (8) su razvili upitnik Skalu zavisnosti od pametnih telefona (*Smartphone addiction scale–SAS*) sa 6 faktora odnosno 33 stavke Likertovog tipa na skali od 1 do 6 (1 – u potpunosti se ne slažem, do 6– u potpunosti se slažem). Šest faktora su: remećenje svakodnevnog života, pozitivna anticipacija, apstinencijalni sindrom, orijentisanost na sajber odnose, prekomerna upotreba telefona i tolerancija. Interna konzistentnost (*Cronbach’s alpha*) upitnika bila je 0,967. Autori su, zatim, na bazi postojeće skale, razvili skraćenu verziju upitnika (*SAS-SV*) kako bi lakše i jednostavnije, za kraće vreme, procenili zavisnost od pametnih telefona. *SAS-SV* upitnik se sastoji od 10 pitanja Likertovog tipa (na skali od 1 do 6). Ukupan skor može biti u opsegu od 10 (minimum) do 60

(B) describes functional impairment criteria that appear as a consequence of smartphone use (physical or psychological problem, using the phone in risky situations, impact on social relations, success at school or at work); and 3) the third group of criteria (C) includes exclusion criteria (in order to exclude manic episodes or obsessive-compulsive disorder). According to their results, characteristics of smartphone addiction overlap, to a great extent, with psychoactive substances dependence and behavioral addictions. The uniqueness of smartphones, first of all, the access to the internet and to various applications, contribute to a wider addictive behavior. Furthermore, the study of Horvath and associates (20) provides evidence for distinct structural and functional changes, or neural mechanisms, specific for behavioral addictions in persons who meet the psychometric criteria for smartphone addiction. Given their widespread use, the study questions the harmlessness of smart phones, especially in individuals that are at increased risk for developing addictive behavior.

On the other hand, Carbonell and Panova (18) claim that the problems associated with the conceptualization and acceptance of technological addictions may be, to a great degree, an issue related to the terminology. "Smartphone addiction" is certainly not that severe and difficult, and with such health consequences in comparison to tobacco and heroin addiction. However, there is no other accepted term for a behavior that manifests as a lack of self-control, attachment, overuse and negative consequences. Therefore, for lack of a better word "addiction" has become an accepted umbrella term. Some authors think that the use of the term "addiction" may misrepresent the severity of the disorder and therefore, they suggest the use of the term "problematic smartphone use".

Billieux defined the problematic use of mobile phones as "the inability to regulate one's use of the mobile phone, which eventually involves negative consequences in daily life" (21). Numerous studies, which suggest that smartphone use is associated with different aspects of dysfunction, support the concept of problematic smartphone use depending on the negative consequences of that use. The studies have shown the significant connectedness between social, interpersonal,

academic dysfunctions, as well as mental health, which points to the fact that smartphone use can have negative consequences for some persons (21).

Scales for the measurement of "problematic smartphone use" and "smartphone addiction"

Due to growing concerns about the excessive use of smartphones, much is being done to identify and assess problematic smartphone use, mainly through the development and application of behavioral assessment scales. Haris and associates (22) included even 78 scales in their review article. These scales were specially developed and validated to identify smartphone use or to diagnose people with smartphone addiction, overuse, excessive phone attachment, etc. Although the construct, which is measured by these scales, may be different, many of them are similar in their theoretical base, even regarding the items that they include. DSM criteria for psychoactive substance dependence were most frequently used to create items in these scales, in order to assess "addiction". As mobile phones developed into smartphones, the terms mobile phone and smartphone were often used in the studies with the same meaning. However, considering the fact that smartphones have a lot more components and functions than mobile phones, the scales are frequently updated and adapted to the specificities of smartphones. We will deal with a few scales that are most commonly used for the assessment of problematic smartphone use or smartphone "addiction".

Smartphone addiction scale (SAS) and Smartphone addiction scale – short version (SAS-SV)

Kwon et al. (8) have developed the Smartphone addiction scale (SAS) with 6 factors, that is, 33 items on a 6-point Likert type scale (1 – strongly disagree to 6 – strongly agree). The six factors are: daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse and tolerance. The internal consistency (Cronbach's alpha) of this questionnaire was 0.967. The authors then, on the basis of the existing scale, have developed the short version of the questionnaire (SAS-SV), in order to assess smartphone addiction more easily and in shorter time. The SAS-SV

(maksimum), gde veći skor ukazuje na veći stepen zavisnosti od pametnih telefona (*Cronbach's alpha* 0,911). Kao granična (*cut-off*) vrednost skora za muškarce predložena je vrednost od 31 (senzitivnost 0,867; specifičnost 0,893), dok je za žene 33 (senzitivnost 0,875; specifičnost 0,886). SAS-SV je preveden i validiran na nekoliko jezika i široko se koristi kao instrument za skrining zavisnosti od pametnih telefona (10, 13, 14, 23, 24).

Upitnik zavisnosti od pametnih telefona (*Smartphone Addiction Inventory – SPAI*) i Upitnik zavisnosti od pametnih telefona – Skraćena verzija (*Smartphone Addiction Inventory –Short Form SPAI-SF*)

SPAI je upitnik od 26 pitanja koji je namenjen proceni zavisnosti od pametnih telefona (25). To je izmenjena verzija kineske Skale za procenu zavisnosti od interneta (*Chinese Internet Addiction Scale*) (26). Pet od 26 stavki originalne skale revidirano je zbog specifičnosti korišćenja pametnih telefona. Ispitanici ocenjuju stavke na Likertovoj skali od 1 (u potpunosti se ne slažem) do 4 (u potpunosti se slažem). Ukupan skor SPAI može biti od 26 do 104. SPAI ima dobru internu konzistentnost (*Cronbach's alpha* 0,94) i test-retest pouzdanost četiri subskale je od 0,80 do 0,91. Lin i saradnici (9) su, zatim, revidirali SPAI upitnik, uz pomoć eksperata za zavisnost od interneta i pametnih telefona, psihijataru i psihologa, i razvili skraćenu verziju upitnika SPAI-SF. SPAI-SF sastoji se od 10 stavki, na skali od 1 do 4. Autori predlažu *cut-off* vrednost od 24/25 za zavisnost od pametnih telefona. I SPAI sa 26 stavki i SPAI-SF sadrže 4 konstrukta bihevioralne zavisnosti i zavisnosti od pametnih telefona (kompulsivno ponašanje, poremećaj funkcionisanja, apstinencijalni sindrom i tolerancija). Granična vrednost koju su odredili psihijatri može se koristiti za skrining zavisnosti i epidemiološka istraživanja.

Skala upotrebe mobilnih telefona (*Mobile Phone Problem Use Scale – MPPUS -27*) i skraćena verzija (*MPPUS-10*)

Bianchi i Philips su uveli skalu problematične upotrebe mobilnih telefona MPPUS-27 (27) koja obuhvata različite aspekte zavisnosti, prevashodno toleranciju, beg od drugih problema, apstinencijalni sindrom, žudnju i negativne posledice na život. Sastoji se od 27 stavki, Likertovog tipa, na koje se odgovara na skali od 1 (u potpunosti netačno) do 10 (u potpunosti tačno), pa ukupan skor može

imati vrednost od 27 do 270 bodova. MPPUS-27 skala je često korišćena u istraživanjima o problematičnoj upotrebi mobilnih telefona (28, 29). Skala ima odličnu internu konzistentnost (*Cronbach's alpha* > 0,94), ali je prilično dugačka i neka pitanja su suvišna, pa je iz tog razloga napravljena skraćena verzija ove skale. Napravljena je MPPUS-10 skala (11), koja ima 4 faktora koja su u vezi sa simptomima zavisnosti (gubitak kontrole, apstinencijalni sindrom, negativne posledice na život i žudnja) i peti faktor, koji odražava socijalnu komponentu upotrebe mobilnih telefona (zavisnost od vršnjaka). Skraćena verzija MPPUS-10 u velikoj meri odražava originalnu MPPUS-27 skalu pa se, zbog lakše i jednostavnije primene, preporučuje njena primena u istraživanjima. Pogodna je za istraživanje na adolescentima.

Upitnik za problematičnu upotrebu mobilnih telefona (*Problematic Mobile Phone Use Questionnaire – PMPUQ*) i ažurirana verzija (*Problematic Mobile Phone Use Questionnaire - Revised – PMPU-Q-R*)

Billieux i saradnici (30) su, još 2008. godine, osmislili PMPUQ kako bi procenili korišćenje i potencijalno problematično korišćenje mobilnih telefona. Prema autorima, problematična upotreba mobilnih telefona je heterogeni i višedimenzionalni konstrukt koji uključuje potencijalne negativne efekte upotrebe mobilnih telefona. PMPUQ ima 30 pitanja i meri četiri različite dimenzije problematične upotrebe mobilnih telefona (zabranjena upotreba, opasna upotreba, zavisnost, finansijski problemi zbog korišćenja). Na osnovu njihovog modela, svaki način prekomernog korišćenja mobilnih telefona (npr. ekstraverzija, treženje potvrde, impulsivnost) zavisi od specifičnih psihosocijalnih faktora i individualnih razlika. Kuss i saradnici (31) su napravili ažuriranu verziju upitnika (*Problematic Mobile Phone Use Questionnaire - Revised – PMPU-Q-R*) koja ima 15 pitanja. Ažurirana verzija ima tri faktora (opasna upotreba, zabranjena upotreba i zavisnost) i prilagođena je korišćenju pametnih telefona. Četvrti faktor, koji se odnosio na finansijske probleme zbog korišćenja telefona, uklonjen je zbog razvoja pametnih telefona (pametni telefoni su dosta jeftiniji u poređenju sa vremenom kad su prvi put uvedeni). Lopez-Fernandez i sardnici (32) su ispitali psihometrijska svojstva 8 verzija PMPQ-SV na različitim jezicima (Nemački, Francuski, Engleski, Finski, Španski, Italijanski, Pol-

questionnaire consists of 10 questions on a 6-point Likert type scale. The total score may range from 10 (minimum) to 60 (maximum), where higher scores point to the higher degree of smartphone addiction (Cronbach's alpha 0.911). The value 31 (sensitivity 0.867; specificity 0.893) is suggested as the cut-off value for men, while for women this value is 33 (sensitivity 0.875; specificity 0.886). The SAS-SV has been translated and validated in a few languages and it is widely used as an instrument for smartphone addiction screening (10,13,14,23,24).

Smartphone Addiction Inventory (SPAI) and Smartphone Addiction Inventory – Short Form (SPAI-SF)

The SPAI is the inventory which consists of 26 questions and which is intended for the assessment of smartphone addiction (25). It is a modified version of the Chinese Internet Addiction Scale (26). Five of 26 items from the original scale were modified due to the specificity of smartphone use. The examinees evaluate items on a 4-point Likert type scale from 1 (strongly disagree) to 4 (strongly agree). The total score of the SPAI may range from 26 to 104. The SPAI has a good internal consistency (Cronbach's alpha 0.94), while the test-retest validity of four subscales ranges from 0.80 to 0.9. Lin and associates (9) then revised the SPAI with the help of experts for Internet and smartphone addiction, psychiatrists, psychologists and they developed a short version of the questionnaire SPAI-SF. The SPAI-SF consists of 10 items, on a scale from 1 to 4. The authors suggest the cut-off value of 24/25 for the smartphone addiction. Both the SPAI with 26 items and the SPAI-SF contain 4 constructs of behavioral addiction and smartphone addiction (compulsive behavior, functional disorder, withdrawal and tolerance). The cut-off value determined by psychiatrists can be used for the screening of addiction and epidemiological research.

Mobile Phone Problem Use Scale – MPPUS-27 and short version (MPPUS-10)

Bianchi and Philips have introduced the mobile phone problem use scale (MPPUS-27) (27) which addresses different aspects of addiction, primarily tolerance, escape from other problems, withdrawal, craving and negative life

consequences. It consists of 27 items that have to be answered on a 10-point Likert type scale ranging from 1 ("not true at all") to 10 ("extremely true"), resulting in a final sum score that may range from 27 to 270 points. The MPPUS-27 is commonly used in research on the problematic mobile phone use (28,29). The scale has an excellent internal consistency (Cronbach's alpha >0.94), but it is quite long and some questions are superfluous, and therefore, the shortened version of this scale was made. The MPPUS-10 (11) has been created and it has 4 factors that are related to the symptoms of addiction (loss of control, withdrawal, negative life consequences and craving) and the fifth factor that reflects the social component of mobile phone use (dependence on peers). The short version of MPPUS-10 reflects, to a great extent, the original version of MPPUS-27 scale, and due to its easier application it is recommended in research. It is useful for the research on adolescents.

Problematic Mobile Phone Use Questionnaire – PMPUQ and the updated version (Problematic Mobile Phone Use Questionnaire – Revised – PMPU-Q-R)

Billieux et al. (30) developed the PMPUQ in 2008 in order to evaluate the actual use and potential problematic use of mobile phones. According to the authors, the problematic mobile phone use is a heterogeneous and multidimensional construct that involves the potential negative effects of mobile phone use. The PMPUQ has 30 questions and it measures four different dimensions of problematic mobile phone use (prohibited use, dangerous use, addiction, financial problems). According to their model, each type of excessive mobile phone use (extraversion pathway, reassurance-seeking pathway, impulsive pathway) depends on specific psychosocial factors and individual differences. Kuss and associates (31) have made the updated version of the questionnaire (Mobile Phone Use Questionnaire – Revised, PMPU-Q-R) that has 15 questions. The revised version has three factors (dangerous use, prohibited use, and dependent use) and it is adapted to smartphone use. The fourth factor, which related to financial problems arising from mobile phone use, was removed due to the development of smartphones (smartphones are a lot cheaper in comparison to the time when

jski i Mađarski). Struktura PMPUQ-SV je potvrđena za skoro sve testirane jezike.

Većina skala su po tipu samoprocene, pa prema tome ne mogu objektivno i pouzdano meriti korišćenje pametnih telefona, što je jedno od ograničenja primene skala na kome bi trebalo raditi. U osnovi ovakvih skala je hipoteza da problematična upotreba pametnih telefona ne korelira toliko sa dužinom korišćenja telefona, već sa nekim osobinama ličnosti, kao što su nedostatak samopouzdanja i impulsivnost (30). S druge strane, u skorije vreme razvijene su aplikacije koje prate korišćenje telefona, i kojima korisnici mogu da ograniče svoje korišćenje (postavljanjem vremenskog limita za određene aplikacije) (33,34). Međutim, kako aplikacije mere dužinu i frekvenciju korišćenja telefona, a ne disfunkcionalnu, odnosno problematičnu upotrebu, one istraživačima mogu pomoći u merenju korišćenja telefona, kao dopuna već razvijenim skalama. Korišćenje različitih skala kako bi se utvrdilo prisustvo zavisnosti, otežava poređenje dobijenih rezultata.

Međutim, i pored toga što je većina ovih skala osmišljena sa namerom da se u budućnosti koriste za kliničke svrhe (npr. zadijagnozu problematične upotrebe pametnih telefona), problematična upotreba pametnih telefona kao vrsta zavisnosti ne nalazi se u DSM-5 i MKB-11, te se skale još uvek koriste samo u istraživačke svrhe. Sve to ukazuje na potrebu za dodatnim istraživanjem ozbiljnosti i težine problematične upotrebe pametnih telefona i njenih posledica, kako bi se razmotrilo da li treba da zauzme mesto u sledećem izdanju DSM ili MKB.

Zaključak

Prema mnogim autorima „zavisnost od pametnih telefona” može se smatrati bihevioralnom zavisnošću. Upotreba termina „problematična upotreba pametnih telefona” i „zavisnost od pametnih telefona”, različiti metodološki pristupi koji se koriste u izučavanju, kao što je primena različitih skala i nedostatak standardizovanih dijagnostičkih kriterijuma, otežavaju definisanje „zavisnosti od pametnih telefona”. Dokazi da prekomerna upotreba telefona može imati različite psihološke, fiziološke i socijalne efekte, idu u prilog činjenici da je „zavisnost od pametnih telefona” kompleksan fenomen koji zahteva dodatna istraživanja.

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they were first introduced). Lopez-Fernandez and associates (32) have examined the psychometric characteristics of 8 versions of PMPUQ-SV in different languages (German, French, English, Finish, Spanish, Italian, Polish and Hungarian). The structure of PMPUQ-SV has been confirmed for almost all the tested languages.

Most scales are self-assessment scales, and therefore, they cannot measure smartphone use in an objective and reliable way, which is one of the limitations of these scales that should be worked on. Such scales are based on the hypothesis that the problematic smartphone use does not correlate much with the duration of smartphone use, but with some personality traits such as the lack of self-confidence and impulsivity (30). On the other hand, applications, which follow the use of mobile phones, have been developed recently and users can limit their use (by setting the time limit for certain applications) (33,34). However, since these applications measure the length and frequency of mobile phone use, but not the dysfunctional, that is, problematic use, they may help researchers to measure mobile phone use, in addition to already developed scales. Using different scales to establish the existence of addiction hinders the comparison of obtained results.

However, despite the fact that most of these scales are designed to be used for clinical purposes in the future (e.g. for the diagnosis of problematic smartphone use), the problematic use of smartphones, as a type of addiction, is not in the DSM-5 and ICD-11, and therefore, these scales are used only for research purposes. All this points to the necessity of additional research of severity and gravity of problematic smartphone use and its consequences in order to consider whether it should be included in the next issue of DSM or ICD.

Conclusion

According to many authors, “smartphone addiction” can be considered a behavioral addiction. The use of the terms “problematic smartphone use” and “smartphone addiction”, different methodological approaches used in the study, such as the application of different scales and the lack of standardized diagnostic criteria, make it difficult to define “smartphone addiction”. The evidence that the excessive use of

mobile phones can have different psychological, physiological and social effects speaks in favor of the fact that “smartphone addiction” is a complex phenomenon that requires additional research.

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