

Kiberohondrija – zdravstvena anksioznost uvjetovana pretraživanjem interneta

/ Cyberchondria – Health Anxiety Related to Internet Searching

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Internet danas zauzima važno mjesto u prikupljanju informacija o zdravlju. Međutim, čini se da može izazvati nepotrebnu zabrinutost za zdravlje koja se naziva kiberohondrija (engl. *cybechondria*). U ovom preglednom radu opisan je konstrukt kiberohondrije te odnos kiberohondrije prema povezanim relevantnim konceptima – zdravstvenoj anksioznosti i hipohondriji. Dan je pregled nalaza istraživanja iz ovog područja koji su integrirani u tri teorijska modela različitih razina. Proširenim *biopsihosocijalno-digitalnim modelom* objašnjeno je kako biološki, psihološki i socijalni čimbenici mogu zajedno rezultirati zdravstvenom anksioznošću pri čemu je predloženo da digitalna komponenta pojačava i ubrzava opisane procese. U okviru *kognitivno-bihevioralnog modela*, pretraživanje zdravstvenih informacija na internetu konceptualizirano je kao okidač u razvoju zdravstvene anksioznosti, ali i oblik tzv. traženja razuvjerenja koje održava zdravstvenu anksioznost. Kako pretraživanje ima svoje specifičnosti u odnosu na druge oblike traženja razuvjerenja, opisan je i *model kiberohondrije* koji pojašnjava zašto se pretraživanje o zdravlju na internetu održava unatoč anksioznosti koja ga prati. Sažeto su prikazana istraživanja o potencijalnim rizičnim čimbenicima za kiberohondriju; o zdravstvenoj anksioznosti, anksioznoj osjetljivosti, netoleranciji neizvjesnosti i metakognicijama, kao i mehanizmi njihova djelovanja. Na kraju su istaknute praktične implikacije istraživanja kiberohondrije.

/ Nowadays, the Internet holds an important place in the process of gathering information regarding health. However, it seems that this can cause an unnecessary concern about health that is referred to as cyberchondria. This review article describes the construct of cyberchondria and its relationship with related relevant concepts – health anxiety and hypochondria. The article presents an overview of research results from this area that have been integrated into three theoretical models of different levels. The expanded biopsychosocial-digital model explains how biological, psychological, and social factors may together result in health anxiety, with the suggestion that the digital component intensifies and accelerates the described processes. Within the framework of the cognitive-behavioural model, searching the Internet about health information is conceptualized as a trigger in the development of health anxiety, but also as a form of reassurance seeking that reflects health anxiety. Since Internet searching has its specific aspects in comparison with other forms of reassurance seeking, the article also describes the cyberchondria model which explains why searching the Internet about health is continued despite the accompanying anxiety. The article summarizes research on potential risk factors for cyberchondria; on health anxiety, anxiety sensitivity, intolerance of uncertainty, and metacognitive beliefs, as well as their mechanisms. Finally, the article points out the practical implications of researching cyberchondria.

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Internet postaje sve važniji izvor informiranja o različitim temama, pa tako i o zdravlju. Više od polovice Europljana pretražuje zdravstvene informacije na internetu (1). Za gotovo 70 % korisnika internet je postao prvi izvor informacija koji će konzultirati kada imaju neko zdravstveno pitanje (2). Odgovori na pitanja o zdravlju mogu se dobiti za samo nekoliko sekundi, anonimno i uz vrlo malu cijenu, na svakom mjestu i u svako vrijeme. Zdravstvene teme o kojima korisnici najviše pretražuju na internetu su: specifične bolesti i zdravstveni problemi (66 %), medicinski tretmani i postupci (55 %), vježbanje i dijeta (52 %), zdravstveni djelatnici (47 %) i lijekovi (45 %) (3). Pretraživanju su sklonije žene (4), mlađe osobe (5), osobe višeg obrazovnog i financijskog statusa (5) te lošijeg zdravlja (6).

Pretraživanje interneta radi informiranja o zdravlju razumljivo je s obzirom na društvene promjene. Zapadno društvo kao društvenu vrijednost ističe preuzimanje osobne odgovornosti za vlastito zdravlje, što podrazumijeva da pojedinac sve više aktivno sudjeluje u prepoznavanju simptoma i zbrinjavanju bolesti, odnosno održavanju zdravlja. U skladu s tim raste opće uvjerenje da moramo biti sposobni samostalno donositi odluke o zdravlju i zaključiti što je za nas najbolje. Pacijenti danas sami promišljaju o tome koji je tretman za njih najbolji te

INTRODUCTION

The Internet is becoming an increasingly important source of information on various topics, including health. More than half of Europeans search for health information on the Internet (1). For almost 70% of Internet users the Internet has become the first source they consult when they have a question regarding health (2). The answers to questions regarding health may be found in only a few seconds, anonymously, and at a very low price, in any place and at any time. Health topics the users most commonly search for are the following: specific diseases and health issues (66%), medical treatments and procedures (55%), exercise and dieting (52%), health workers (47%), and medication (45%) (3). Those more likely to search are women (4), younger people (5), highly educated and wealthier people (5), and those of poorer health (6).

Searching the Internet for health information is understandable when one takes into consideration social changes. The western society considers taking responsibility for one's health a social value, which means that an individual increasingly actively participates in recognizing symptoms, treating diseases, and maintaining their health. In accordance with this, there is growing opinion that we must be able to make independent decisions about health and conclude what is best for us. Today, patients think about the best treatment for themselves and

postavljaju pitanja zdravstvenim djelatnicima u potrazi za dodatnim informacijama.

O značenju utjecaja interneta na zdravstvene odluke govori i najnoviji prijedlog o proširenju biopsihosocijalnog modela zdravlja i bolesti. Skupina autora iz SAD-a i Australije predlaže da se uz biološke, psihološke i socijalne faktore koji pridonose zdravlju i bolesti, u model uvrsti i digitalni faktor koji može imati utjecaj na sva tri prethodna faktora (7). Proširenje modela treba dovesti i do promjena u obrazovanju zdravstvenih djelatnika, kako bi se i kod njih osvijestila uloga digitalizacije u razumijevanju zdravstvenih ponašanja pacijenata te osmišljavanju zdravstvenih politika.

Dostupnost zdravstvenih informacija na internetu nosi sa sobom brojne prednosti. Pacijenti pomoću informacija na internetu postaju svjesni izbora koji im u liječenju stoje na raspolaganju, proširuju informacije dobivene od medicinskog osoblja, smanjuju broj nepotrebnih odlazaka liječniku i, naposljetku, anonimno i brzo dolaze do željenih informacija (8). Većina korisnika, preko 90 %, izjavila je da su na internetu naučili nešto novo o svom zdravlju (9). Češća upotreba interneta za prikupljanje zdravstvenih informacija povezana je s većom vjerojatnošću promjene zdravstvenih ponašanja (10). Informacije vezane uz zdravlje prikupljene na internetu mogu utjecati na odluke koje ljudi donose: kada će tražiti dijagnozu ili terapiju od stručnjaka, kako će se nositi s trenutnom bolešću ili nekim kroničnim stanjem te kako će održavati dobro svoje ili tuđe zdravlje (11).

Iako pretraživanje zdravstvenih informacija na internetu nudi niz prednosti, stručnjaci sve više upozoravaju na potencijalne opasnosti. Negativni aspekt lake dostupnosti informacija je njihova upitna kvaliteta, odnosno manjak zdravstvene pismenosti korisnika koja je potrebna za procjenu kvalitete pretraživanih sadržaja (8). Osobe koje pretražuju u pravilu imaju visoku razinu povjerenja u informacije prona-

ask medical workers questions in search of additional information.

The latest suggestion about the expansion of the biopsychosocial model of health and diseases reflects the significance of the Internet's influence on medical decisions. A group of authors from the USA and Australia have suggested that, along with biological, psychological, and social factors that contribute to health and disease, the model should also contain the digital factor, which may have an effect on all of the aforementioned factors (7). The expansion of the model should also lead to changes in the education of health workers in order to make them aware of the role of digitalization in the understanding of patient health behaviours and the creation of medical policies.

The availability of health information on the Internet has many benefits. By using information available on the Internet patients become aware of the choices they have at their disposal as part of their treatment, expand the information received from medical staff, reduce the number of unnecessary doctor's appointments and, finally, find desired information anonymously and quickly (8). Most users, over 90%, say that they have learned something new about their health on the Internet (9). Frequently using the Internet for gathering information related to health relates to a greater likelihood of changing health behaviour (10). Health-related information found on the Internet may affect the decisions people make: when to ask for a diagnosis or therapy from experts, how to tackle the current disease or a certain chronic condition, and how to maintain their own or someone else's health (11).

Although searching the Internet for health information offers a variety of advantages, experts increasingly warn of the potential dangers. The negative aspect of easy availability of information is its questionable quality and the users' lower medical literacy necessary for the assessment of content quality (8). People who search the Internet usually have a high level of

đene na internetu (12), iako stranice sadrže mnogo netočnih i nepotpunih informacija (13) što vrijedi i za sadržaje na našem jeziku (14). U jednom istraživanju pokazalo se da samo 39 % od ukupno 500 internetskih stranica o zdravlju djece, pruža korisnicima točne i pouzdane informacije (15). U svrhu isticanja stranica koje pružaju korisne, točne i pouzdane informacije o zdravlju razvijen je HONcode certifikat kvalitete koji dodjeljuje *The Health On the Net Foundation* akreditiran od strane Ekonomskog i socijalnog vijeća Ujedinjenih naroda (16). U Hrvatskoj su ovu oznaku kvalitete za sada dobile primjerice internetske stranice Pliva zdravlje, Cybermed, CentarZdravlja itd. Nažalost, samo četvrtina korisnika prigodom pretraživanja zdravstvenih informacija na internetu obraća pažnju na kvalitetu izvora informacija (3).

Prigodom pretraživanja o zdravlju najviše se koriste opće tražilice (Google ili Yahoo) (17,18). Internetske tražilice funkcioniraju tako da rezultati koji su češće otvarani dobivaju viši rang među rezultatima. Pokazalo se da korisnici najčešće odabiru visoko rangirane stranice (19) čime održavaju njihov poredak (20). Istovremeno, korisnici imaju tendenciju pregledavanja stranica koje opisuju rijetke, intrigantne i opasne bolesti, umjesto onih koje opisuju „benigne“ i, čini se, „dosadne“ probleme (21). Primjerice, zamislimo da pojedinac želi saznati uzroke boli u prsima. Iako je puno veća vjerojatnost da je ovaj simptom indikator različitih benignih pojava poput dišnih i mišićnih problema koji nestanu samim protokom vremena, vjerojatnije je da će otvoriti poveznicu koja govori o srčanom udaru (11). Budući da broj „klikova“ određuje kasniji rang stranice, komplicirana i ozbiljna bolesti imat će viši rang nego vjerojatnije i manje zastrašujuće objašnjenje. White i Horvitz (11) su pokazali da se na internetu srčani udar pojavljuje kao rezultat pretraživanja za „bol u prsima“ u čak 37 % najviše rangiranih rezultata pretraživanja dok je u stvarnosti njihova zajednička pojavnost tek 10 %. No, čak

confidence in the information found on the Internet (12) although such pages contain a lot of inaccurate and incomplete information (13), which is also true of the content in our language (14). One study showed that only 39% of 500 pages about children's health offer accurate and reliable information (15). In order to point out the pages that offer useful, accurate, and reliable information about health, the HONcode certificate of quality was developed and is awarded by the *Health on the Net Foundation*, accredited by the United Nations Economic and Social Council (16). In Croatia, this brand of quality has been awarded to several web pages such as: Pliva zdravlje, Cybermed, CentarZdravlja etc. Unfortunately, only a quarter of online users pay attention to the quality of information sources while searching for information about health (3).

While searching about health, general search engines (Google or Yahoo) are most commonly used (17,18). Internet search engines place results that are accessed more often higher up in the list of results. It has been shown that users usually choose high-ranking pages (19), thereby maintaining their position in the order (20). Simultaneously, users tend to view pages that describe rare, intriguing, and dangerous diseases instead of those that describe “benign” ones and seemingly “boring” problems (21). For instance, let us imagine that a user wants to learn about the causes of chest pain. Although it is more likely that this symptom is an indicator of various benign conditions such as respiratory and muscle problems that disappear over time, the user is more likely to open a link that is about cardiac arrest (11). Since the number of “clicks” determines the future ranking position of the page, a complicated and serious disease will be ranked higher than a more probable and less frightening explanation. White and Horvitz (11) have shown that cardiac arrest appears as an online search result for “chest pain” in 37% of highly ranked results, while in reality the rate of their mutual occurrence is only 10%. However, at some point in time, 75% of Internet users confuse the ranking

75 % korisnika interneta u nekom trenutku zamijeni rangiranost zdravstvenih stranica sa stvarnom mogućnošću dobivanja određene bolesti (11). Izlaganje osoba bez medicinske naobrazbe, kompleksnoj medicinskoj terminologiji i objašnjenjima medicinskih stanja može povećati vjerojatnost samodijagnoze i samotretmana (22). Samodijagnosticiranje bolesti često dovodi do razvijanja pretjerane zabrinutosti za svoje zdravstveno stanje (11), odnosno do razvoja kiberohondrije (engl. *cyberchondria*).

Pojam kiberohondrije prvi put je upotrijebljen u Ujedinjenom Kraljevstvu u novinama *Business Wire*, 1996. godine (23). U nekoliko sljedećih godina dopijeva u razne popularne medije, primjerice *Sunday Times*, BBC, *The Independent* i *Wall Street Journal* (23). Nije trebalo dugo da iz javne sfere svoje mjesto pronađe i u znanstvenoj pa se 2000. godine ovaj pojam prvi puta koristi u članku objavljenom u *The Medical Journal of Australia* (23). Danas u tražilici Google znalac može pronaći preko 1000 znanstvenih članaka u kojima se spominje engleski termin *cyberchondria*. Prema savjetu jezičnih stručnjaka u hrvatskom jeziku treba koristiti termin kiberohondrija.

Kako se radi o vrlo aktualnoj temi koja će svakako u budućnosti zaokupljati pažnju stručnjaka za mentalno zdravlje i ostalih zdravstvenih djelatnika, cilj ovog rada je razmotriti značenje pojma kiberohondrije, dati sažet pregled relevantnih istraživanja u području, pokušati integrirati nalaze u postojeće teorijske okvire te istaknuti smjernice za buduća istraživanja.

KIBEROHONDRIJA, ZDRAVSTVENA ANKSIOZNOST I HIPOHONDRIJA

Je li kiberohondrija samo moderna manifestacija hipohondrije, njezin specifičan oblik, sasvim novi psihički poremećaj ili rizični čimbenik za razvoj psihopatologije? Da bismo dali odgovore na ta pitanja, nužno je prvo precizno

order of pages about the health with a real probability of contracting a particular disease (11). Exposing people without medical education to complex medical terminology and explanations of medical conditions may lead to higher probability of self-diagnosis and self-treatment (22). Self-diagnosis often leads to the development of excess concern for one's health (11) or, in other words, the development of cyberchondria.

The term cyberchondria was first used in the United Kingdom in the newspaper *Business Wire* in 1996 (23). Over the following several years it reached various popular media such as *Sunday Times*, BBC, *The Independent* and *Wall Street Journal* (23). It did not take long for the term to move from the public to the scientific sphere, and in 2000 it was first used in an article published in *The Medical Journal of Australia* (23). Today, the search engine Google Scholar finds over 1000 journal articles that mention the English term *cyberchondria*. According to language experts, in the Croatian language the term *kiberohondrija* should be used.

Since this is a current issue that will certainly continue to occupy the attention of experts for mental health and other health workers in the future, the goal of this article is to examine the meaning of the term cyberchondria, give a summary of relevant studies in the area, attempt to integrate the findings into existing theoretical frameworks, and point out directions for future research.

CYBERCHONDRIA, HEALTH ANXIETY, AND HYPOCHONDRIA

Is cyberchondria only a modern manifestation of hypochondria, its specific form, a completely new psychological disorder, or a risk factor for the development of psychopathology? In order to provide answers to these questions, it is necessary to first define cyberchondria precisely. Although an agreement has yet to be reached about the definition of the term cyberchondria

odrediti što je kiberohondrija. Iako u znanstvenim krugovima još nije postignut konsenzus oko definicije pojma kiberohondrije, Starcevic i Berle (21) navode da se u većini definicija pojavljuju dvije ključne komponente: prvo, da je riječ o pretraživanju simptoma na internetu koje je na neki način pretjerano, i drugo, da je ono popraćeno neugodnim emocionalnim stanjem. Ovi autori nude vjerojatno najprihvaćeniju i najcitiraniju definiciju u području prema kojoj je kiberohondrija „pretjerano ili ponavljano pretraživanje zdravstvenih informacija na internetu potaknuto uznemirenošću i anksioznošću radi zdravlja, a koje samo pojačava takvu uznemirenost i anksioznost“ (21).

U skladu s tim, istraživanja ukazuju da su kiberohondrija i zdravstvena anksioznost povezani, no ipak različiti konstrukti (24). Starcevic i Berle (21) smatraju da je kiberohondrija ponašajna komponenta zdravstvene anksioznosti, odnosno da se pojavljuje samo kod osoba koje već jesu pretjerano zdravstveno anksiozne. *Zdravstvena anksioznost* je briga o zdravlju u odsutnosti patologije ili nerazmjernu prisutnoj patologiji (25). Može poprimiti cijeli raspon intenziteta (26), a kada je ekstremno izražena ulazi u domenu psihičkog poremećaja. U ranijoj klasifikaciji DSM-IV u tu svrhu korišten je termin *hipohondrija* (28), no zbog svoje dvosmislenosti danas se smatra nepouzdanim dijagnostičkim terminom (21). Stoga je hipohondrija u DSM-5 zamijenjena s dvije nove dijagnostičke kategorije: *Poremećaj sa somatskim simptomima* i *Anksiozni poremećaj zbog bolesti* (29). Ova druga kategorija se odnosi na ekstremni oblik zdravstvene anksioznosti.

TEORIJSKI MODELI ZDRAVLJA, ZDRAVSTVENE ANKSIOZNOSTI I KIBEROHONDRIJE

Postoji nekoliko teorijskih modela kojima je moguće razumjeti kako i zašto dolazi do kiberohondrije i kakav je njezin status u odnosu

in scientific circles, Starcevic and Berle (21) claim that most definitions contain two key components: first, that it describes searching the Internet for symptoms that is in some way excessive and, secondly, that this is followed by an unpleasant emotional state. The authors offer the most widely accepted and quoted definition in the field, according to which cyberchondria is “an excessive or repeated search for health-related information on the Internet, driven by distress or anxiety about health, which only amplifies such distress or anxiety” (21).

In line with this, research shows that cyberchondria and health anxiety are related, but different constructs (24). Starcevic and Berle (21) believe that cyberchondria is a behavioural component of health anxiety or, in other words, that it appears only in people who already feel too much health anxiety. *Health anxiety* is a concern for health in the absence of pathology or one that is disproportional to the existing pathology (25). It may assume an entire range of intensities (26), and in cases when it is extremely pronounced it enters the domain of psychological disorders. In the earlier classification of DSM-IV the term *hypochondria* was used for this purpose (28), but due to its ambiguity it is today considered an unreliable diagnostic term (21). Therefore, hypochondria was replaced with two new diagnostic categories in DSM-5: *somatic symptom disorder* and *illness anxiety disorder* (29). The second category refers to an extreme form of health anxiety.

THEORETIC MODELS OF HEALTH, HEALTH ANXIETY, AND CYBERCHONDRIA

There are several theoretic models that can explain how and why cyberchondria occurs and what its status is in relation to other relevant concepts on various levels. On the wider level, it is important to understand the interaction of biological, psychological, and social factors in the

na druge relevantne koncepte na različitim razinama. Na široj razini važno je razumjeti međudjelovanje bioloških, psiholoških i socijalnih čimbenika u konceptu zdravlja i bolesti, a koji u suvremenom društvu mogu pogodovati razvoju kiberohondrije. Potom, na užoj razini, treba razumjeti položaj kiberohondrije u razvoju i održavanju patološke zabrinutosti za zdravlje. I na kraju, na najužoj razini, treba razumjeti pojavu i održavanje kiberohondrije kao konkretne ponašajne strategije.

Biopsihosocijalni model zdravlja i bolesti u digitalnom društvu

Biopsihosocijalni model naglašava važnost međudjelovanja bioloških, psiholoških i socijalnih faktora u razumijevanju uzroka i ishoda bolesti i zdravlja (29,30). Ovaj model je proširenje biomedicinske paradigme koja se u objašnjenju zdravlja i bolesti oslanjala isključivo na biološke faktore. No, zbog suvremenih društvenih promjena, predloženo je dodatno proširenje modela kroz uključivanje komponente *digitalnoga* koja ima specifičan utjecaj na sva tri postojeća elementa modela (7). Ovaj prošireni model može biti posebno koristan u razumijevanju kiberohondrije koja je u uskoj vezi s razvojem modernih tehnologija.

Putem modernih tehnologija podatci iz *biološke* domene postaju lako dostupni općoj populaciji (31). Tako je danas putem pametnog telefona moguće pristupiti podacima o bolestima, rezultatima medicinskih postupaka, pa čak i podacima o vlastitim biološkim funkcijama poput pulsa (npr. aplikacija *Instant Heart Rate*). Ovi digitalni podatci o zdravlju mogu utjecati na *psihološku* komponentu modela. Naime, informacije o zdravlju mogu smanjiti, ali i povećati anksioznost u odsutnosti somatske bolesti (32), kada govorimo o kiberohondriji.

concept of health and disease which may contribute to the development of cyberchondria in the modern world. On a narrower level, it is necessary to understand the position of cyberchondria in the development and maintenance of pathological concern for one's health. And, finally, on the narrowest level, it is also necessary to understand the appearance and maintenance of cyberchondria as a concrete behavioural strategy.

Biopsychosocial model of health and disease in the digital society

The biopsychosocial model emphasises the importance of the interaction of biological, psychological, and social factors in the understanding of the causes and outcomes of disease and health (29,30). This model is an expansion of the biomedical paradigm which, in its explanation of health and disease, relied exclusively on biological factors. However, due to changes in the modern society, there has been a suggestion of an additional expansion of the model by the inclusion of the *digital* component, which has a specific influence on all three existing models (7). This expanded model may be especially useful in the understanding of cyberchondria, which is closely related to the development of modern technologies.

Through modern technologies, information from the *biological* domain become easily available to the general population (31). Today, by using a smartphone, one can access information on diseases, the results of medical treatments, and even data on one's own biological functions such as the pulse (e.g. using the application *Instant Heart Rate*). Such digital data about health may influence the *psychological* component of the model. The information regarding health may reduce anxiety, but also increase it in the absence of a somatic disease (32) in case of cyberchondria.

Modern technologies are also changing the *social* environment of the individual. Firstly, they en-

Suvremene tehnologije u zdravlju mijenjaju i *socijalno* okruženje pojedinca. Prvo, omogućuju pristup sadržajima koje kreiraju sami bolesnici o svojim iskustvima i nošenju s bolešću. Takav sadržaj može uznemiriti osobe koje su već zabrinute za zdravlje jer su primjerice sklone precijeniti vjerojatnost da i same imaju bolest o kojoj su čule (33). Drugo, konkretan sadržaj kojem će korisnik biti izložen nakon pretrage o nekom simptomu ovisi o odabirima drugih korisnika jer se na njima temelje ranije spomenuti algoritmi rangiranja koje tražilice koriste. Oba ova procesa predstavljaju utjecaje socijalne komponente na psihološku u razvoju kiberohondrije, ali putem digitalne komponente.

No, razmotri li se socijalnu komponentu sa šireg shvaćanja, suvremene tehnologije na *kulturnoj* razini omogućuju prenošenje poruke o osobnoj odgovornosti za zdravlje promicanjem strategije samo-motrenja, poput samo-pregleda madeža, preventivnih pregleda dojki, računanja BMI indeksa ili mjerenja krvnog tlaka. Takve poruke i savjeti na internetskim portalima često su nalaze uz „lagane teme“ poput romantičnih veza, recepata i mode (34) gdje se na zdravlje gleda kao na životni stil (34), odnosno osobni odabir. Tako digitalna komponenta može pojačati potencijalno negativan utjecaj socijalne na psihološku komponentu i doprinijeti kiberohondriji kod ranjivih pojedinaca.

Općenitije, digitalnu komponentu može se shvatiti kao kontekst u kojem se međusobni utjecaji jedne komponente biopsihosocijalnog modela na drugu mogu ubrzati i pojačati te time doprinijeti pojavi nepotrebne zabrinutosti za zdravlje i patnje kod somatski zdravih osoba. Ove društvene promjene mogle bi djelovati kao globalni čimbenik rizika za razvoj zdravstvene anksioznosti, no ne objašnjavaju tijek razvoja zdravstvene anksioznosti na pojedinačnoj razini.

able access to content created by patients themselves about their own experiences and how they handle diseases. Such content can disturb people who are already concerned for their health because, for instance, they have a tendency to believe they have a disease which they heard something about (33). Secondly, the concrete content the user will be exposed to after searching about a symptom depends on the choices of other users because that is what the abovementioned search engine ranking algorithms are based on. Both of these processes represent the influences of the social component on the psychological one in the development of cyberchondria, but this occurs through the digital component.

However, if we consider the social component from a wider understanding, on the cultural level modern technologies enable the transmission of a message about personal responsibility for health by promoting the strategy of self-observation such as examining moles, preventive inspection of breasts, calculating the BMI index, or measuring blood pressure. Such messages and advice found on the Internet are often located alongside “lighter topics” such as romantic relationships, recipes, and fashion (34), and in such places health is viewed as a lifestyle (34) or a personal choice. Therefore, the digital component may exacerbate the potentially negative influence of the social component on the psychological one and contribute to cyberchondria in vulnerable individuals.

Generally, the digital component may be understood as a context in which the mutual influence of one component of the biopsychosocial model on another one may be accelerated and enhanced, therefore contributing to the appearance of an unnecessary concern for health and lead to suffering in somatically healthy people. Such social changes may act as a global risk factor on the development of health anxiety, but they do not explain the course of the development of health anxiety on the individual level.

Kognitivno-bihevioralni model zdravstvene anksioznosti

Kako je ranije navedeno, kiberohondrija se javlja kod osoba koje su već pretjerano zabrinute za zdravlje, odnosno zdravstveno su anksiozne. Prema kognitivno-bihevioralnom modelu predisponirajući čimbenik za razvoj pretjerane zdravstvene anksioznosti su disfunkcionalna vjerovanja o bolesti, zdravlju i zdravstvenim ponašanjima (35). Ova vjerovanja obično se usvajaju u ranoj životnoj dobi i to na temelju osobnih iskustava s bolešću i zdravstvenim djelatnicima, iskustava bolesti u obitelji te informacija iz medija. Primjeri takvih problematičnih uvjerenja su: „svaki simptom znak je ozbiljne bolesti“, „zdrava osoba nema nikakvih simptoma“, „ako odmah ne odem liječniku, moglo bi biti prekasno“, „moje tijelo je vrlo osjetljivo“, itd. Ova uvjerenja aktiviraju unutrašnji ili vanjski okidači. Primjer unutrašnjih okidača su bolovi (npr. glavobolja), tjelesne senzacije (npr. trnci) ili promjene (npr. pigmentacija kože). Primjer vanjskih okidača su informacije o bolesti koje osoba dobiva izvana (npr. vijest o bolesti ili smrti poznanika, informacije o bolesti na televiziji ili internetu). Kada su aktivirana, vjerovanja potiču negativne automatske misli (35), odnosno situacijski specifične kognicije. Npr., vjerovanje da je „svaki simptom znak ozbiljne bolesti“ će uz okidač glavobolje rezultirati mišlju da se radi o tumoru mozga koji se polako razvija. Prema tome, sadržaj negativnih automatskih misli uključuje *katastrofične interpretacije* benignih simptoma, dok se vjerojatnije i manje zastrašujuće interpretacije (npr. iscrpljenost) odbacuju (36). Jasno je da su takve interpretacije popraćene snažnom anksioznošću, velikom osobnom patnjom i onesposobljenošću.

Jednom kada se zdravstvena anksioznost pojavi, osoba ju pokušava kontrolirati na razne načine, no oni obično pojačavaju ili dugoročno održavaju anksioznost. Među njima ključni su različiti oblici sigurnosnih ponašanja poput *provjeravanja* tijela (npr. mjerenje temperatu-

Cognitive-behavioural model of health anxiety

As has already been mentioned, cyberchondria occurs in people who are already excessively concerned for their health, i.e. have high health anxiety. According to the cognitive-behavioural model, the predisposing factors for developing excessive health anxiety are dysfunctional beliefs about disease, health, and health behaviour (35). Such beliefs are usually acquired early in life on the basis of personal experience with diseases and health workers, the experiences with disease in the family, and the information found in media. The examples of such problematic beliefs are the following: “every symptom is a sign of a serious disease,” “a healthy person has no symptoms,” “if I do not see a doctor immediately, it may be too late,” “my body is very sensitive,” etc. These beliefs are activated by internal or external triggers. Examples of internal triggers are pain (e.g. headache), body sensations (e.g. tingling), or changes (e.g. skin pigmentation). Examples of external triggers include information about diseases a person usually gains from the outside (e.g. news about the disease or death of an acquaintance, information about diseases found on TV or the Internet). Once activated, such beliefs stimulate negative automatic thoughts (35), i.e. situationally specific cognitions. For instance, with the trigger of headache, the belief that “every symptom is a sign of disease” will result in the thought that the person has a brain tumour that is slowly developing. Therefore, the content of negative automatic thoughts includes *catastrophic interpretations* of benign symptoms, while more probable and less frightening interpretations (e.g. exhaustion) are rejected (36). It is clear that such interpretations are followed by a strong anxiety, great personal suffering, and disability.

Once health anxiety appears, the person attempts to control it in various ways, but this only intensifies or maintains anxiety in the long-run. This includes various forms of safety seeking behaviours, for example *examining*

re, pipanje tijela da se utvrdi postoje li kvržice, pregled kože) i *traženja razuvjerenja* (npr. razgovor s članovima obitelji o simptomima i strahovima, odlazak na pregled, obavljanje pretraga). Sukladno modelu, traženje razuvjerenja rezultira privremenim padom anksioznosti, odnosno negativnim potkrepljenjem, ali dugoročno održava neprestano bavljenje tijelom i bolestima (36). Tako se u kliničkoj praksi vidi da izjave liječnika koje u jednom času osobu umire, vrlo brzo postanu izvor novih preokupacija. Kada se strah ponovno pojavi, osoba ima potrebu ponovno tražiti razuvjerenje u vezi nekog novog simptoma ili promjene postojećeg simptoma jer je naučila da joj to pomaže.

Pretraživanje zdravstvenih informacija na internetu može se konceptualizirati kao okidač zdravstvene anksioznosti, ali i oblik sigurnosnog ponašanja, odnosno traženja razuvjerenja. No, internet je značajno manje predvidiv izvor razuvjerenja (21) u odnosu na liječnika, partnera ili medicinsku enciklopediju, i može rezultirati različitim ishodima. Kako bi se objasnile specifičnosti pretraživanja zdravstvenih informacija na internetu u okviru zdravstvene anksioznosti, razvijen je model kiberohondrije (21).

MODEL KIBEROHONDRIJE

Prema modelu kiberohondrije koji su predložili Starcevic i Berle (21), pretraživanje zdravstvenih informacija na internetu može dovesti do dva ishoda: 1. barem privremenog pada anksioznosti kada osoba zaključi da su njezini simptomi benigni i 2. porasta anksioznosti zbog zastrašujućih informacija na koje je naišla na internetu. Istraživanja potvrđuju da pretraživanje zaista može rezultirati i padom i porastom anksioznosti (32). U prvom slučaju riječ je o klasičnom traženju razuvjerenja. Budući da u tom slučaju pretraživanje rezultira padom, a ne porastom anksioznosti, autori zaključuju da se to ne može smatrati kiberohondrijom. U dru-

one's body (e.g. taking temperature, touching the body for lumps, examining the skin) and *reassurance seeking* (e.g. talking to family members about symptoms and fears, going for a check-up, doing tests). In line with this model, reassurance seeking results in a temporary reduction of anxiety, i.e. negative support, but in the long term this maintains an incessant interest in the body and diseases (36). In clinical practice, it is apparent that statements made by a doctor may at one point in time calm the person, but soon become a source of new preoccupation. Once fear reappears, the person feels the need to seek reassurance once again regarding some new symptom or a change in the existing symptom because they have learned that this helps them.

Searching for information about health on the Internet may be conceptualized as a trigger for health anxiety, but also as a form of safety seeking behaviour, i.e. reassurance seeking. However, the Internet is a significantly less predictable source of reassurance (21) in comparison with a doctor, partner, or a medical encyclopaedia, and may result in various outcomes. In order to explain the specifics of searching for information about health on the Internet within the framework of health anxiety, the model of cyberchondria has been developed (21).

MODEL OF CYBERCHONDRIA

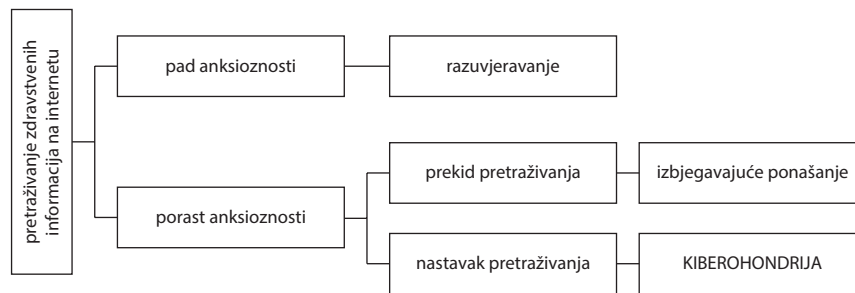
According to the model of cyberchondria proposed by Starcevic and Berle (21), searching for information about health on the Internet may lead to two outcomes: 1. a temporary decrease in anxiety when the person concludes that their symptoms are benign, and 2. an increase in anxiety due to the frightening information they encountered on the Internet. Research confirms that searching the Internet may actually result in both a decrease and an increase of anxiety (32). In the first case, this is a classic form of seeking reassurance. Since in this case the search results in a decrease, and

gom slučaju, kada dođe do porasta anksioznosti, osoba može prestati koristiti internet u ovu svrhu. Takva reakcija mogla bi se smatrati oblikom izbjegavajućeg ponašanja u okviru kognitivno-bihevioralnog modela (37) U skladu s tim postoje indikacije da zdravstveno anksiozne osobe koje ne pretražuju zdravstvene informacije na internetu to ne čine upravo zbog straha da bi se njihova anksioznost mogla povećati (38). No, jednokratna pojava pretraživanja zdravstvenih informacija popraćena porastom anksioznosti te naknadnim izbjegavanjem pretraživanja, prema ovim autorima, također nije kiberohondrija, jer nedostaje komponenta ekscesivnosti pretraživanja (21). Tek ako osoba, unatoč barem povremenoj pojavi porasta anksioznosti zbog pretraživanja, nastavlja s ovim ponašanjem možemo govoriti o kiberohondriji. Model kiberohondrije nalazi se na slici 1.

Autori modela navode nekoliko mogućih razloga zbog kojih osoba nastavlja pretraživati informacije unatoč porastu anksioznosti. Prvo, moguće je da korisnici nastavljaju pretraživati nakon što su naišli na ozbiljnu dijagnozu jer se nadaju da će u nastavku pretraživanja pronaći

not an increase of anxiety, the authors conclude that this cannot be considered cyberchondria. In the second case, when an increase of anxiety occurs, the person may stop using the Internet for this purpose. Such a reaction may be considered avoidance behaviour in the framework of the cognitive-behavioural model (37). In line with this, there are indications that people with health anxiety who do not search the Internet for information about health do not do that precisely out of fear that their anxiety may increase (38). However, according to the authors, a single search for information about health followed by an increase in anxiety and a subsequent avoidance of searching also does not constitute cyberchondria due to the lack of the component of excessive searching (21). Only if the person, despite at least an occasional increase in anxiety due to searching, continues with this behaviour, can the model of cyberchondria be considered. Figure 1 illustrates the model of cyberchondria.

The authors of the model list several possible reasons that may lead a person to continue searching for information despite an increase in anxiety. Firstly, it is possible that users continue



SLIKA 1. Model kiberohondrije (Starcevic i Berle, 2013)

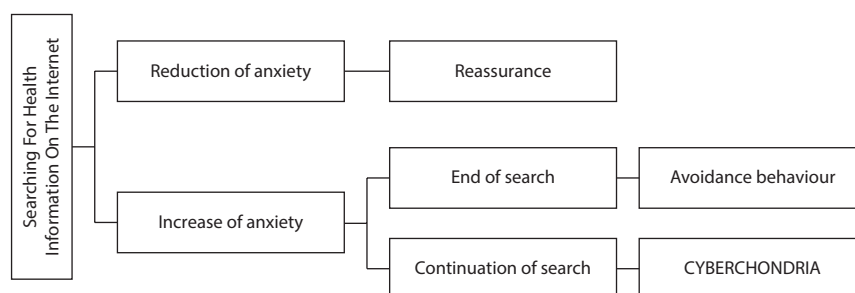


FIGURE 1. The model of cyberchondria (Starcevic and Berle, 2013)

neko vjerojatnije i manje ozbiljno objašnjenje svojih simptoma te se umiriti. Međutim, tu pretpostavku tek treba ispitati u istraživanjima. Drugo, moguće je da imaju potrebu pro-naći savršeno i potpuno točno objašnjenje svojih simptoma, a za što je potrebno pregledati veliku količinu informacija. Kao potporu ovoj pretpostavci autori navode povezanost hipohondrije s perfekcionizmom i drugim aspektima opsesivno-kompulzivnog poremećaja ličnosti (39). No, za sada ne postoje objavljena istraživanja o vezi perfekcionizma i kiberohondrije. Treće, nejasne i složene informacije na internetu stvaraju neizvjesnost, a budući da ove osobe imaju teškoće u toleriranju neizvjesnosti nastavljaju pretraživati kako bi tu neizvjesnost smanjile. Za sada postoje istraživanja koja ukazuju na vezu kiberohondrije i netolerancije neizvjesnosti (40), ali čini se da postoje varijable koje su relevantnije za kiberohondriju (41). I posljednje, pretpostavlja se da ove osobe imaju teškoće u razlučivanju je li neki izvor informacija na internetu vjerodostojan ili ne zbog čega nastavljaju pretraživati. Ova pretpostavka nije dobila jasnu potvrdu jer se pokazalo da se osobe s visokom i niskom zdravstvenom anksioznošću ne razlikuju u procjeni točnosti informacija na internetu (38). Nadalje, osobe s visokom zdravstvenom anksioznošću uznemire se zbog informacija o bolesti samo ako izvor informacija potječe od vjerodostojnog izvora (zdravstvena ustanova) (33), što implicira da su takav izvor uspješno diferencirali od nevjerodostojnog.

Ovdje možemo dodati još jedno objašnjenje odražavanja pretraživanja unatoč porastu anksioznosti. Barem povremeno olakšanje koje uslijedi nakon pretraživanja može dugoročno održavati ovo disfunkcionalno ponašanje jer je snažno negativno potkrepljenje s nepravilnim vremenskim rasporedom. Istraživanja su potvrdila da visoko zdravstveno anksiozne osobe vide pretraživanje kao neki oblik rješavanja problema koji dovodi do olakšanja, usprkos

searching after they encountered a serious diagnosis because they hope that the continuation of searching may lead to some more probable and less serious explanation for their symptoms, and thus calm them. However, this assumption must be tested in research. Secondly, it is possible that they feel the need to find the perfect and completely accurate explanation for their symptoms, and this requires the inspection of a large amount of information. In support for this assumption, the authors put forward the connection of cyberchondria with perfectionism and other aspects of the obsessive-compulsive disorder (39). However, no research on the link between perfectionism and cyberchondria has yet been published. Thirdly, unclear and complex information found on the Internet creates a feeling of uncertainty, and since the users have difficulty tolerating uncertainty, they continue searching in order to decrease this uncertainty. Currently, there is existing research indicating a connection between cyberchondria and uncertainty intolerance (40), but it seems there are variables that are more relevant for cyberchondria (41). And, finally, it is assumed that such people have difficulty ascertaining whether a certain Internet source is reliable or not, and this leads them to continue searching. This assumption has not been completely confirmed because it has been shown that people with high health anxiety and those with low health anxiety do not differ in their ability to assess the accuracy of information found on the Internet (38). Furthermore, people with high health anxiety are upset by information about diseases only if the information source comes from a reliable source (a health institution) (33), which implies that they have successfully distinguished such sources from those that are unreliable.

Here we may add another explanation for continued searching despite an increase in anxiety. The temporary relief that follows a search may, in the long term, maintain this dysfunctional behaviour because it strongly negatively supports it at irregular intervals. Research has

tome što su svjesne da su neke informacije netočne ili dane od strane nekompetentnih osoba (42).

Unatoč tome što sve njegove pretpostavke još nisu dobile čvrstu empirijsku potvrdu, opisani model kiberohondrije vrijedan je s više aspekata. Prvo, omogućuje integraciju fenomena kiberohondrije u postojeći kognitivno-behavioralni model zdravstvene anksioznosti koji je detaljno istražen i primjenjiv u tretmanu (43). Drugo, model jasno razlikuje kiberohondriju od drugih ponašanja i ishoda povezanih s pretraživanjem zdravstvenih informacija na internetu što olakšava njezinu preciznu i jednoznačnu operacionalizaciju u istraživanjima. Treće, model je pokušaj integracije dosadašnjih nalaza u području. I na kraju, zasigurno je potaknuo mnoga istraživanja ovog fenomena koja će, bez obzira na to pokaže li se model točnim ili ne, pomoći boljem razumijevanju kiberohondrije.

ČIMBENICI RANJIVOSTI ZA RAZVOJ KIBEROHONDRIJE

Zašto pretraživanje nekada dovodi do porasta zdravstvene anksioznosti, a nekada ne? Do sada je prepoznato nekoliko potencijalnih čimbenika ranjivosti za kiberohondriju koji mogu pomoći boljem razumijevaju sadržaja ovog konstrukta i razvoju hipoteza o tome kako do kiberohondrije dolazi.

Zdravstvena anksioznost

Zdravstvena anksioznost se pokazala kao jedan od značajnijih čimbenika ranjivosti za pojavu kiberohondrije. Do sada je utvrđeno da osobe s visokom zdravstvenom anksioznošću zaista o zdravlju pretražuju češće, većina barem jednom tjedno (33,38,44-46) te da njihove sesije pretraživanja traju dulje (38,44,45) što bi ukazivalo u prilog ekscesivnosti ovog ponašanja. Kada govorimo o posljedicama pretraživanja,

confirmed that people with high health anxiety see searching as a form of problem solving that leads to relief, although they are aware that some information is incorrect or provided by people who are not experts (42).

Although all of its assumptions have yet to receive firm empirical confirmation, the described model of cyberchondria is valuable in several ways. Firstly, it enables the integration of the phenomenon of cyberchondria into the existing cognitive-behavioural model of health anxiety, which has been researched in detail and is applicable in treatment (43). Secondly, the model clearly distinguishes cyberchondria from other behaviours and outcomes connected to searching for health-related information on the Internet, which facilitates its precise and unequivocal operationalization in research. Thirdly, the model is an attempt at integrating existing findings in the field. And finally, it has certainly prompted ample research of this phenomenon which will, whether or not the model proves to be accurate, help to improve the understanding of cyberchondria.

VULNERABILITY FACTORS FOR THE DEVELOPMENT OF CYBERCHONDRIA

Why does searching sometimes lead to an increase in health anxiety and sometimes not? Several potential vulnerability factors for cyberchondria have been recognized and may help better understand the content of this construct and the development of hypotheses regarding how cyberchondria happens.

Health anxiety

Health anxiety has been recognized as one of the more significant vulnerability factors for the onset of cyberchondria. It has been confirmed that people with high health anxiety actually search more often about health, most of them at least once a week (33,38,44-46), and that their search sessions last longer (38,44,45), which

pokazalo se da visoko zdravstveno anksiozne osobe izvještavaju o većoj uznemirenosti i anksioznosti nakon pretraživanja (38,45), te da češće odlaze liječniku na temelju informacija koje pronađu na internetu (44,47).

Znači li to da je pretraživanje o zdravlju „sigurno“ za osobe koje nisu zdravstveno anksiozne? Rezultati istraživanja ne daju jednoznačne odgovore. Neka istraživanja pokazuju da u ovoj populaciji pretraživanje rezultira padom anksioznosti (38,45) te da veća učestalost pretraživanja kod njih rezultira manjim brojem posjeta liječniku (47). Također, jedna studija (33) je pokazala da čitanje informacija o bolesti na internetu kod nisko zdravstveno anksioznih osoba ne dovodi do uvjerenja da su zaražene tom bolešću, kao što je bio slučaj s visoko zdravstveno anksioznima. To bi ukazivalo da pretraživanje o zdravlju na internetu za ove osobe nije štetno, već može biti korisno, kao izvor informiranja i umirenja.

Nasuprot tome, neka istraživanja pokazuju da pretraživanje može imati negativne posljedice i na osobe koje nisu zdravstveno anksiozne. Tako se pokazalo da se zabrinutost nakon pretraživanja, praćena dugotrajnijim pretraživanjem o izvoru uznemirenosti i odlaskom liječniku radi tih informacija može javiti i u općoj populaciji (11). Čini se da će, kada do eskalacije od benignog simptoma do ozbiljne bolesti jednom dođe, i visoko, i nisko zdravstveno anksiozne osobe doživjeti porast anksioznosti (48). Međutim, iz nekog razloga pretrage nisko zdravstveno anksioznih osoba rjeđe dovode do zastrašujućih dijagnoza (11). Dva longitudinalna istraživanja također ukazuju u prilog pretpostavci da pretraživanje može biti opasno i za osobe koje nisu zdravstveno anksiozne. Ranije spomenuto longitudinalno istraživanje (46) pokazalo je da porast pretraživanja o zdravlju predviđa porast u anksioznosti dva mjeseca kasnije upravo kod nisko zdravstveno anksioznih osoba i obratno, da porast anksioznosti u ovoj populaciji predviđa porast u pretraživanju.

goes in favour of the excessiveness of this behaviour. When talking about the consequences of searching, it has been shown that people with high health anxiety report greater concern and anxiety after searching (38,45), and that they visit their doctor more frequently on the basis of information found on the Internet (44,47).

Does this mean that searching for information about health is “safe” for people who do not have health anxiety? Research results do not provide unequivocal answers. Some studies have shown that searching results in a decrease of anxiety in this population (38,45) and that more frequent searching results in fewer visits to the doctor (47). Also, one study (33) has shown that people who have low health anxiety do not develop the belief that they have a certain disease when they read information about it on the Internet, unlike in the case of those who have high health anxiety. This indicates that searching the Internet about health information is not harmful for such people and may actually be beneficial as a source of information and peace of mind.

On the other hand, some studies show that searching may have negative consequences on people who do not have health anxiety. It has been shown that concern after searching, followed by a longer search on the source of concern and a visit to the doctor due to such information, may also occur in the general public (11). It seems that, once a benign symptom escalates into a serious disease, both people with low and high health anxiety experience a serious increase in anxiety (48). However, for some reason, searching done by people with low health anxiety rarely leads to frightening diagnoses (11). Two longitudinal studies also go in favour of the assumption that searching may also be dangerous for people with no health anxiety. The abovementioned longitudinal study (46) has shown that increased searching about health is a predictor of an increase in anxiety two months later in people with low health anxiety and vice versa, that an increase in anxiety in this population is a predictor

Sukladno tome, drugo je longitudinalno istraživanje na općem uzorku pokazalo da porast pretraživanja rezultira porastom depresivnosti 6 do 8 mjeseci kasnije (49).

Netolerancija neizvjesnosti

Jedan od glavnih ciljeva pretraživanja o zdravlju na internetu je smanjenje neizvjesnosti (50). Važna prednost za korisnike je činjenica da internet nudi mogućnost da se neki nejasan simptom istraži čim se pojavi (42), što znači da osoba ne mora tolerirati neizvjesnost neko vrijeme kao što je slučaj s liječničkim pregledom. No, s obzirom da će korisnik na internetu biti izložen velikoj količini informacija, koje mogu biti kontradiktorne (51), pretraživanje može rezultirati i povećanom neizvjesnosti. U skladu s time, pokazalo se da je povezanost učestalosti pretraživanja i zdravstvene anksioznosti snažnija za više razine *netolerancije neizvjesnosti* (52). Autor zaključuje da bi teškoće u toleriranju neizvjesnosti mogle biti rizični faktor za kiberohondriju. Kao dodatni argument navodi se da su osobe s izraženijom netolerancijom neizvjesnosti sklone dvosmislene informacije o zdravlju procijeniti na katastrofičan način te precijeniti negativne posljedice (52,53). Kada pronađu takve informacije na internetu, ove bi se osobe mogle snažno uznemiriti, a potom zbog potrebe da smanje neizvjesnost nastaviti pretraživati (21) što dovodi do ekscitabilnosti pretraživanja.

Naknadno se pokazalo da je samo jedan aspekt konstrukta netolerancije neizvjesnosti relevantan za kiberohondriju – inhibitorna dimenzija (npr. „Kada nisam siguran, ne mogu funkcionirati“), za razliku od prospektivne (npr. „Uvijek želim znati što mi budućnost nosi“) (41). Slično je utvrđeno i za zdravstvenu anksioznost (40). Čini se da je nemogućnost osobe da nastavi funkcionirati kada se neizvjesnost pojavi ključan aspekt briga oko zdravlja, osobito za kiberohondriju jer bi mogao potaknuti dugotrajno pretraživanje s ciljem sma-

of increased searching. In line with this, the second longitudinal study done on a general sample has shown that increased searching results in an increase of depression 6 to 8 months later (49).

Intolerance of uncertainty

One of the main goals of searching the Internet about health is reduction of uncertainty (50). The fact that the Internet offers the ability to research an insignificant symptom immediately after its appearance constitutes an important advantage for the users (42), which means that a person does not have to tolerate uncertainty for some time, unlike in the case of a visit to the doctor. However, since users are exposed to a large amount of information on the Internet, which may be contradictory (51), searching may also result in increased uncertainty. In line with this, it has been shown that the connection between the frequency of searching and health anxiety is stronger for higher levels of *intolerance of uncertainty* (52). The author concludes that difficulties in tolerating uncertainty may be risk factors for cyberchondria. As an additional argument, the author claims that people with more pronounced intolerance of uncertainty have a tendency to assess ambiguous information about health in a catastrophic way, thus overevaluating negative consequences (52,53). Once they find such information on the Internet, these individuals may be seriously upset and may then continue searching in order to reduce uncertainty (21), which leads to excessive searching.

Subsequently, it has been shown that only one aspect of the construct of intolerance of uncertainty is relevant for cyberchondria – inhibitory dimension (e.g. “When I am not sure, I cannot function”), unlike the prospective one (e.g. “I always want to know what the future will bring for me”) (41). A similar conclusion has been reached concerning health anxiety (40). It seems that a person’s inability to continue functioning when faced with uncertainty is a key aspect in caring about their health, especially for cyberchondria

njenja neizvjesnosti što ometa druge aspekte funkcioniranja.

Anksiozna osjetljivost

Skлонost katastrofičnim interpretacijama simptoma anksioznosti zbog vjerovanja da će one rezultirati štetnim tjelesnim, psihičkim i socijalnim posljedicama (54) ključna je karakteristika konstrukta *anksiozne osjetljivosti*. Pri tome osoba može biti zabrinuta zbog somatskih posljedica (npr. srčani udar), psiholoških posljedica (gubitak razuma) ili socijalnih posljedica (sramoćenje).

Veza anksiozne osjetljivosti i hipohondrije utvrđena je ranije (55), a relevantnom se pokazala samo dimenzija straha od somatskih posljedica (40). No, za kiberohondriju je utvrđen drugačiji uzorak povezanosti: različiti aspekti kiberohondrije povezani su sa sve tri komponente anksiozne osjetljivosti (41), što može pomoći razjasniti razliku između zdravstvene anksioznosti i kiberohondrije. Osobito je zanimljiva veza kiberohondrije sa socijalnim aspektom anksiozne osjetljivosti. Naime, logično je da su među zdravstveno anksioznim osobama, pretraživanju na internetu sklone upravo one osobe koje vjeruju da bi pokazivanje zabrinutosti za zdravlje pred drugima moglo imati negativne socijalne posljedice (41). Tako su, primjerice, ove osobe u intervjuima izjavile da pretražuju o svojim zdravstvenim brigama na internetu jer imaju negativna očekivanja i iskustva sa zdravstvenim djelatnicima (42). Stoga možda preferiraju internet kao izvor razuvjeravanja umjesto razgovora s liječnikom, obitelji ili prijateljima.

Metakognicije

Vjerovanja koja pojedinac ima o svojim brigama oko zdravlja mogu utjecati na način na koji će se s njima nositi. *Metakognicije*, odnosno kognicije o kognicijama, pokazale su se važnima kod različitih psihičkih poremećaja (56), uključujući

because this may instigate long-term searching with the goal of reducing uncertainty, which disrupts other aspects of functioning.

Anxiety sensitivity

The tendency for catastrophic interpretations of anxiety symptoms due to the belief that they will result in harmful physical, psychological, and social consequences (54) is the key characteristic of the construct of *anxiety sensitivity*. The person may be concerned about somatic consequences (e.g. cardiac arrest), psychological consequences (loss of sanity), or social consequences (embarrassment).

The connection between anxiety sensitivity and hypochondria has already been established (55), and only the aspect of fear from somatic consequences has been shown to be relevant (40). However, a different pattern of connection has been established for cyberchondria: different aspects of cyberchondria connected with all three components of anxiety sensitivity (41), which can help clarify the difference between health anxiety and cyberchondria. Of special interest is the connection between cyberchondria and the social aspect of anxiety sensitivity. It is logical that among individuals who have health anxiety, those who have a tendency to search the Internet also believe that showing concern about their health in front of others may have negative social consequences (41). For example, in interviews such people have said that they search the Internet about their health concerns because they have negative expectations and experiences with health workers (42). Therefore, they may prefer the Internet as a source of reassurance instead of a conversation with a doctor, family member, or friend.

Metacognitions

An individual's beliefs about their concern about health may affect the way they handle them. *Metacognitions*, or cognitions about cognitions,

i zdravstvenu anksioznost (57). Prema metakognitivnom modelu (58) pozitivna vjerovanja o brigama, u ovom kontekstu da briga može zaštititi osobu od razvoja bolesti i smrti, potpomaže održavanju ove disfunkcionalne i iscrpljujuće kognitivne aktivnosti. S druge strane, negativna vjerovanja o brigama, npr. da ih nije moguće kontrolirati i da će brige u konačnici naštetiti zdravlju, pojačavaju osjećaj distresa. Pokazalo se da je kiberohondrija povezana s metakognitivnim vjerovanjima, čak i kada se zdravstvena anksioznost kontrolira (59). Posebno važnima pokazala su se vjerovanja o nekontrolabilnosti vlastitih briga o zdravlju. Autori pretpostavljaju da kada se pojavi zabrinutost za zdravlje, ove osobe pretražuju o zdravlju na internetu da bi smanjile svoju anksioznost. Međutim, ona se zbog informacija na internetu može dodatno pojačati što će učvrstiti vjerovanje da brige o zdravlju nije moguće kontrolirati.

MJERENJE KIBEROHONDRIJE

Navedene informacije upućuju na veliku važnost proučavanja kiberohondrije. Tu važnost prepoznali su McElroy i Shelvin (60) i razvili prvu multidimenzionalnu ljestvicu pod nazivom Ljestvica izraženosti kiberohondrije (*Cyberchondria Severity Scale*, CSS) sa 33 čestice. Autori pretpostavljaju postojanje petofaktorske strukture kiberohondrije (kompulzivnost, rastresenost, ekscitivnost, traženje drugog mišljenja i nepovjerenje u medicinsko osoblje). Upravo je zadnji faktor izazvao najviše neslaganja oko ljestvice. Iako su McElroy i Shelvin u svojem istraživanju dobili petfaktorsku strukturu, kasnije provjere nisu uspjele doći do istih rezultata. Fergus (24), Norr i sur. (61) te Barke i sur. (62) smatraju da peti faktor nije dio konstrukta kiberohondrije. Faktorska struktura hrvatskog prijevoda nailazi na identične probleme (63).

U nas je razvijena Kratka ljestvica kiberohondrije (*The Short Cyberchondria Scale*, SCS) (64).

have been shown to be important in various psychological disorders (56), including health anxiety (57). According to the metacognitive model (58), positive beliefs about worry (in this context, the belief that worrying may protect a person from developing a disease and dying) help maintain this dysfunctional and exhausting cognitive activity. On the other hand, negative beliefs about worry, e.g. that they are impossible to control and that they will ultimately harm one's health, increase the feeling of distress. It has been shown that cyberchondria is connected with metacognitive beliefs, even when health anxiety is controlled (59). Of special importance are beliefs about the uncontrollability of health related thoughts. The authors assume that, once worry about one's health appears, such people search the Internet about health in order to reduce their anxiety. However, due to information on the Internet, their anxiety may actually increase, which strengthens the belief about uncontrollability of illness related thoughts.

MEASURING CYBERCHONDRIA

The abovementioned information indicates the great importance of studying cyberchondria. This importance has been recognized by McElroy and Shelvin (60), who have developed the first multidimensional scale called *Cyberchondria Severity Scale* (CSS), which has 33 items. The authors report five-factor structure of cyberchondria (compulsivity, distractedness, excessiveness, asking for a second opinion, and lack of trust in medical workers). The last factor has provoked the largest amount of disagreement about the scale. Although McElroy and Shelvin reached a five-factor structure in their research, subsequent examinations have failed to replicate identical results. Fergus (24), Norr et al. (61), and Barke et al. (62) all believe that the fifth factor is not part of the construct of cyberchondria. The factor structure of the Croatian translation encounters identical problems (63).

Radi se o istraživačkom instrumentu koji je ekstremno kratak (4 čestice), valjana je, standardizirana mjera kiberohondrije, jednostavan je za primjenu, i međukulturnu upotrebu jer se čestice odnose na sržne elemente kiberohondrije. Međutim, nužna su daljnja istraživanja ove ljestvice kako bi se potvrdila njezina univerzalnost u međukulturnim uvjetima. Kratka ljestvica kiberohondrije prikazana je u tablici 1.

PREVENCIJA I TRETMAN KIBEROHONDRIJE

Do sada je u literaturi predloženo nekoliko strategija za prevenciju pojave kiberohondrije. Neke od njih usmjeravaju se na internetske tražilice, algoritme u podlozi tražilica i zdravstvene sadržaje na internetu. Tako se predlaže razvoj *software*-a koji može detektirati pokušaje samo-dijagnosticiranja, osigu-

In Croatia, *The Short Cyberchondria Scale (SCS)* has been developed (64). This is a research instrument that is extremely short (4 units) and is a valid, standardized measurement tool for cyberchondria, easy for implementation and intercultural use because the items refer to core elements of cyberchondria. However, further research of this scale is required in order to confirm its universality in intercultural conditions. *The Short Cyberchondria Scale* is shown in Table 1.

PREVENTION AND TREATMENT OF CYBERCHONDRIA

Several strategies for the prevention of the onset of cyberchondria have been proposed in the literature. Some of them focus on Internet search engines, algorithms that underlie the search engines, and health content on the Internet. There has been the suggestion of developing software that can detect attempts at

TABLICA 1. Kratka ljestvica kiberohondrije (*Short Cyberchondria Scale, SCS*, Jokić-Begić i sur., 2017)

Molimo Vas da za svaku tvrdnju označite onaj odgovor za koji smatrate da se najviše odnosi na Vas:							
Uopće se ne slažem	Uglavnom se ne slažem	Niti se slažem niti ne slažem	Uglavnom se slažem	U potpunosti se slažem			
1	2	3	4	5			
1.	Nakon pretrage zdravstvenih informacija zbunjena sam informacijama koje sam pronašla.		1	2	3	4	5
2.	Nakon pretrage zdravstvenih informacija osjećam se preplašeno.		1	2	3	4	5
3.	Nakon pretrage zdravstvenih informacija osjećam se frustrirano.		1	2	3	4	5
4.	Kada jednom počnem tražiti zdravstvene informacije, teško mi je prestati.		1	2	3	4	5

Bodovanje: Rezultat se računa kao zbroj bodova za sve četiri tvrdnje pri čemu pojedini odgovori nose sljedeći broj bodova: uopće se ne slažem = 1, uglavnom se ne slažem = 2, niti se slažem, niti se ne slažem = 3, uglavnom se slažem = 4 i u potpunosti se slažem = 5.

TABLE 1. *Short Cyberchondria Scale, SCS*, Jokić-Begić et al., 2017

For each claim, please select the response that is most relevant for you.							
Completely disagree	Mostly disagree	Neither agree nor disagree	Mostly agree	Completely agree			
1	2	3	4	5			
1.	After searching for health information, I am confused by information I have found.		1	2	3	4	5
2.	After searching for health information, I feel frightened.		1	2	3	4	5
3.	After searching for health information, I feel frustrated.		1	2	3	4	5
4.	Once I start searching for health information, I find it difficult to stop.		1	2	3	4	5

Scoring: The result is calculated as the sum of points for all four claims, whereby the individual responses have the following number of points: completely disagree = 1, mostly disagree = 2, neither agree nor disagree = 3, mostly agree = 4, and completely agree = 5.

ravanje pouzdanih i točnih rezultata tražilica kao odgovor na nekoliko uobičajenih pretraga, označavanje potencijalno opasnih stranica (11) te inkorporiranje činjenica o prevalenciji i vjerojatnosti pojedinih dijagnoza u tražilice (21). Ponuda točnih i razumljivih zdravstvenih informacija (65) te navođenje vjerojatnijih uzorka simptoma u tekstovima koji opisuju rijetke i ozbiljne bolesti (11), također može smanjiti vjerojatnost eskalacije. Ove strategije podrazumijevaju blisku suradnju stručnjaka iz zdravstvene i informatičke domene.

Neke strategije za prevenciju kiberohondrije usmjeravaju se izravno na korisnike interneta pa se primjerice predlaže njihova edukacija o zdravlju koja može olakšati procjenu točnosti informacija na internetu što bi smanjilo vjerojatnost eskalacije (45) ili edukacija o tome kako pronaći željenu informaciju na internetu bez osjećaja preplavljenosti njihovom kvantitetom (65). Trebalo bi provjeriti jesu li takve edukacije zaista djelotvorne u prevenciji kiberohondrije kada dođe do izloženosti zastrašujućim informacijama o zdravlju.

No, kako pomoći korisnicima kod kojih je do kiberohondrije već došlo, osobito onih koji imaju visoku zdravstvenu anksioznost? Ako je kiberohondrija dio psihičkog poremećaja – patološke zabrinutosti za zdravlje – ima ju smisla tretirati u okviru tog poremećaja. Uglavnom se predlažu tehnike iz kognitivno-bihevioralne terapije (KBT) za koje se pokazalo da su učinkovite u tretmanu zdravstvene anksioznosti (43). Kiberohondriju je moguće konceptualizirati kao sigurnosno ponašanje, a potom putem bihevioralnih eksperimenata pomoći pacijentu da prepozna negativne posljedice ove strategije i ubuduće ograniči pretraživanje (38). U tome može pomoći *software* koji blokira pristup onim sadržajima koji mogu potaknuti anksioznost (45). Kao i u klasičnom tretmanu zdravstvene anksioznosti može se preporučiti postupno izlaganje zastrašujućim sadržajima

self-diagnosis, ensuring reliable and accurate search results as an answer to several common topics, marking potentially dangerous pages (11), and incorporating facts on the prevalence and probability of certain diagnoses into the search engines (21). Offering accurate and understandable health information (65) and listing the most probable causes of symptoms in texts describing rare and serious diseases (11) may also reduce the probability of escalation. These strategies require the close cooperation of experts from the fields of medicine and information technology.

Certain strategies for the prevention of cyberchondria focus on Internet users directly so, for example, there is the suggestion of educating users about health, which may aid them in assessing the accuracy of information on the Internet and may reduce the probability of escalation (45), or the suggestion of educating them on how to find desired information on the Internet without feeling overwhelmed by their quantity (65). Future research is needed to test whether such forms of education are truly effective in the prevention of cyberchondria in the case of exposure to frightening information about health.

However, how do we help users who already have cyberchondria, especially those with high health anxiety? If cyberchondria is part of a psychological disorder – a pathologic concern about health – it makes sense to treat it within the framework of that disorder. Most of the suggested techniques are from the cognitive-behavioural therapy (CBT), which have been shown to be effective in the treatment of health anxiety (43). Cyberchondria can be conceptualized as a safety seeking behaviour, and then patients can be helped to recognize the negative consequences of this strategy through behavioural experiments and, in the future, limit their search (38). This can be aided by software that blocks access to content that may trigger anxiety (45). As in classic treatment for health anxiety, a gradual exposure to frightening content on the Inter-

na internetu s ciljem habituacije (21). S obzirom da postoje naznake da su netolerancija neizvjesnosti, anksiozna osjetljivost i metakognicije o zdravlju povezane s kiberohondrijom, može biti korisno posebno se na njih usmjeriti u okviru psihoterapijskog tretmana (41,52,59). U tu svrhu mogu se koristiti različite tehnike poput izlaganja neizvjesnosti, mijenjanja vjerovanja o neizvjesnosti i zdravstvenim brigama, *mindfulness*, itd. No, za sada još ne postoje istraživanja o učinkovitosti navedenih tehnika u tretiranju kiberohondrije.

ZAKLJUČAK

Dostupnost interneta širokom krugu ljudi učinila je pretraživanje informacija jednostavnijim i bržim nego ikad prije. Sve više ljudi okreće se internetu u potrazi za informacijama, pa tako i informacijama o zdravlju. Iako su prednosti interneta nesumnjive, sve su jasnije i negativne posljedice takvog načina informiranja. Jedna od negativnih posljedica je kiberohondrija, odnosno intenziviranje anksioznosti koje prati opetovano pretraživanje zdravstvenih informacija na internetu. Ovaj se fenomen istražuje zadnjih 15-tak godina i do sada nije postignut konsenzus radi li se o zasebnom psihopatološkom entitetu ili se radi o ponašajnoj manifestaciji zdravstvene anksioznosti. Kiberohondrija je osobito karakteristična za osobe s visokom zdravstvenom anksioznošću, što ide u prilog da se radi o istom fenomenu. No, metodološki dobro osmišljena longitudinalna istraživanja pokazuju da bi i kod zdravih osoba pretraživanje moglo vremenom potaknuti razvoj pretjerane zabrinutosti za zdravlje. Ovi nalazi daju podršku kognitivno-bihevioralnom modelu prema kojemu pretraživanje može biti i okidač zdravstvene anksioznosti i njezin održavajući faktor. Nužna su daljnja istraživanja, prije svega na kliničkim skupinama koja će pokazati radi li se o specifičnim obrascima ponašanja i doživljavanja koja su povezana upravo

net with the aim of habituation may be recommended (21). Since there are indications that intolerance of uncertainty, anxiety sensitivity, and metacognitions about health are connected with cyberchondria, it may be useful to focus on them specifically within psychotherapeutic treatment (51,52,59). For this purpose, various techniques may be used, such as exposure to uncertainty, changing beliefs about uncertainty and health concerns, mindfulness, etc. However, there are no existing studies on the effectiveness of the aforementioned techniques in the treatment of cyberchondria.

CONCLUSION

The availability of the Internet to a wide circle of people has made searching for information simpler and faster than ever before. Increasing numbers of people reach for the Internet in search of information, including information about health. Although the advantages of the Internet are beyond doubt, the negative consequences of this form of obtaining information are becoming more obvious. One such negative consequence is cyberchondria, or the intensification of anxiety followed by repeated searching for health information on the Internet. This phenomenon has been studied for the past fifteen years, and no consensus has yet been reached regarding whether it is a separate psychopathological entity or a behavioural manifestation of health anxiety. Cyberchondria is particularly characteristic for people with a high level of health anxiety, which goes in favour of the claim that this is actually the same phenomenon. However, methodologically well-conceived longitudinal studies have shown that even in healthy people searching may over time trigger the development of excessive concern about health. Such findings support the cognitive-behavioural model, according to which searching may be also a trigger for health anxiety and its maintenance factor. Further research is required, primarily on clinical groups, which

s pretraživanjem interneta ili se radi samo o ponašajnoj manifestaciji pretjerane zabrinutosti za zdravlje. Iako je sada prepoznato nekoliko karakteristika korisnika i internetskih tražilica koje bi mogle olakšati pojavu porasta anksioznosti zbog pretraživanja, točni mehanizmi putem kojih do toga dolazi još nisu razjašnjeni.

Sasvim je izvjesno da će internet postajati sve značajniji izvor podataka o zdravlju i bolesti, te je stoga važno razumjeti čimbenike koji vode do pojačavanja zdravstvene anksioznosti i kiberohondrije kako bi se mogle osmisliti preventivne i tretmanske aktivnosti. Značajni pomoci mogu se učiniti u edukaciji. Prije svega, sadašnje i buduće zdravstvene djelatnike treba educirati o fenomenu pretraživanja i njegovim posljedicama. Svakako treba povećavati zdravstvenu pismenost javnosti uključivanjem informacija o zdravlju u kurikule nastave već od osnovne škole. Iako može zvučati utopijski, trebalo bi educirati IT stručnjake koji kreiraju algoritme na tražilicama o posljedicama koje rangiranja stranica ostavlja na mentalno zdravlje. Kod osoba koje već imaju intenzivnu kiberohondriju preporuča se primjenjivati KBT tretmane koji prate protokole za zdravstvenu anksioznost uz prilagodbe usmjerene smanjivanju pretraživanja, odnosno informiranju na kvalitetnim stranicama.

will show whether there are specific patterns of behaviour and experience that are connected to searching the Internet or whether this is simply a behavioural manifestation of excessive concern about health. Although several characteristics of users and Internet search engines which may simplify the increase of anxiety due to searching have been recognized, the exact mechanisms which lead to this have yet to be explained.

It is clear that the Internet will continue to become a more significant source of information about health and disease, which is why it is important to understand the factors that lead to increased health anxiety and cyberchondria and create activities for its prevention and treatment. Significant improvements can be made in education. Primarily, current and future health workers should be educated on the phenomenon of searching the Internet and its consequences. The health literacy of the public should definitely be increased by including information about health in school curricula from the level of primary school. Although this may sound utopian, IT experts who create algorithms for search engines should be educated about the consequences that ranking pages has on mental health. For people who already have intense cyberchondria, it is recommended to apply CBT treatments which follow the protocols for health anxiety, with adjustments focused on reducing searching and finding information on quality pages.

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