

# Važnost interneta u informiranju o zdravlju kod trudnica

## */The Importance of the Internet in Obtaining Health-related Information in Pregnant Women*

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Internet je u današnje vrijeme učestao medij putem kojeg osobe prikupljaju informacije o zdravlju. Žene češće koriste internet kako bi došle do zdravstvenih informacija, a njihova sklonost pretraživanju intenzivira se tijekom trudnoće koja je za njih vrlo važno životno razdoblje. U ovom preglednom radu sažeti su nalazi o fenomenu pretraživanja zdravstvenih informacija na internetu kod trudnica. Detaljno su opisani facilitirajući i inhibirajući faktori zbog kojih se trudnice upuštaju u pretraživanje informacija o zdravlju, kao i procesi u zdravstvenom sustavu koji ih navode na pretraživanje. Prikazani su najčešće korišteni internetski izvori zdravstvenih informacija i teme o kojima trudnice najviše pretražuju. Objasnjene su aspekte pouzdanosti informacija namijenjenih trudnicama na internetu, kao i faktori koje one uzimaju u obzir prigodom procjene točnosti i relevantnosti informacija. Dan je sažet pregled demografskih, opstetričkih i psiholoških karakteristika trudnica zbog kojih su one sklonije pretraživanju informacija o zdravlju. Psihološke karakteristike koje su opisane su zdravstvena pismenost, samoeфикаsnost, zdravstveni lokus kontrole, zdravstvena anksioznost i anksioznost specifična za trudnoću. Objasnjene su efekti i posljedice koje internetsko pretraživanje ima na funkcioniranje i dobrobit trudnica s naglaskom na kompulzivno pretraživanje i intenziviranje anksioznosti nakon pretraživanja. Na kraju rada je opisana važnost daljnjih istraživanja u tom području s obzirom na brojne praktične implikacije.

*/ The Internet has become a commonly used medium through which persons obtain information on health. Women use the Internet more often to obtain health-related information, and their tendency towards searching the Internet for information increases during pregnancy, which is a very important period in their lives. This review article presents findings on the phenomenon of searching the Internet for health-related information in pregnant women. It includes a detailed description of facilitating and inhibiting factors due to which pregnant women engage in Internet searches on health, as well as processes within the healthcare system that lead to such searches. We describe the most commonly used internet sources for health-related information and the most common search topics in pregnant women. Various aspects of the reliability of the information intended for pregnant women that can be found on the Internet are described, as well as factors that they take into account when evaluating the accuracy and the relevance of the information. We also present a concise overview of the demographic, obstetric, and psychological characteristics of pregnant women due to which they are more prone to web searches on information related to health. The psychological characteristics described herein comprise health literacy, self-efficacy, health-related locus of control, health-related anxiety, and pregnancy-specific anxiety. We explain the effects and consequences of Internet searches on the functioning and wellbeing of pregnant women, with an emphasis on compulsive web searches and intensification of anxiety after searching. Finally, we describe the importance of research in this area given the numerous practical applications.*

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Internet je u današnje doba globalno raširen i postaje sve učestaliji medij putem kojeg osobe vrlo jednostavno, brzo i anonimno mogu doći do informacija o svom zdravlju (1). Žene su sklonije pretraživanju zdravstvenih informacija na internetu (2) i to je posebno učestalo tijekom trudnoće, koja je vrlo važno, složeno i osjetljivo razvojno razdoblje u njihovom životu (1). Trudnoća ulazi u pet najtraženijih zdravstvenih pojmova koje ljudi pretražuju na internetu (3), a majke su jedna od skupina koje najviše koriste internet kako bi pronašle zdravstvene informacije i donijele odluke o zdravlju (4). Od trudnica se danas očekuje visoka razina aktivnosti i uključenosti u trudnoću i brigu za dijete te samostalno donošenje odluka o zdravlju (5). Također, smatra se da je moderno viđenje trudnoće takvo da se trudnice intenzivno medicinski nadgledaju zbog čega se trudnoću može doživjeti kao „bolest“, a ne kao prirodno stanje (5). Stoga nije čudno da žene imaju potrebu biti informirane i koristiti sve izvore koji su im dostupni, poput interneta.

Dosadašnja istraživanja pružaju raznolike podatke o broju žena koje koriste internet kako bi našle informacije o zdravlju. Američka i azijska istraživanja navode da je taj broj viši od 75 % (6), dok neka europska izvještavaju o podaci-

**INTRODUCTION**

Today, the Internet is globally available and has become an increasingly used medium that people can employ to simply, quickly, and anonymously obtain information on their health (1). Women are more prone to searching for health-related information on the Internet (2), and this is especially pronounced during pregnancy, which represents a very important, complex, and sensitive developmental period in their lives (1). Pregnancy is one of the five most searched health-related terms that people research on the Internet (3), and mothers are one of the groups that uses the Internet the most to find health-related information and make decisions on health (4). Today, pregnant women are expected to show a high level of activity and involvement in pregnancy and child care and to independently reach decisions on health (5). It is also believed that the modern perception of pregnancy results in pregnant women receiving intense medical monitoring, which can lead to pregnancy being viewed as an “illness” rather than a natural state (5). It is therefore not surprising that women feel a need to be informed and use every available source of information, such as the Internet.

Current research presents varied data on the number of women that use the Internet to find health-related information. American and Asian studies report that this number is above 75% (6),

ma od čak 98 % (2) što pokazuje da trudnice u visokom postotku aktivno koriste internet zbog zdravstvenih pretraživanja. Larsson (7) nalazi da je učestalost korištenja interneta za nalaženje informacija o trudnoći od jednom do čak 62 puta mjesečno, a Declercq, Sakala, Corry i Applebaum (8) izvještavaju o medijanu od šest sati na mjesec. U jednom istraživanju (9) najveći broj trudnica je tražilo informacije na internetu svaki tjedan, a nešto manji broj svakodnevno. Većina trudnica internet koristi za pretraživanje informacija o zdravlju manje od jednog sata u danu, a čak oko 40 % više od jednog sata na dan (10).

Zabrinjavajući je podatak da se većina trudnica ne osjeća spremnima za porod. Moguće je da tome pridonosi i korištenje interneta jer su trudnice u virtualnom svijetu izložene velikoj količini informacija i mogu imati dojam da je jednostavno saznati apsolutno sve o trudnoći i porodu. Postoji mogućnost da se one danas više ne boje nepoznanica vezanih uz porod, nego upravo suprotno, toga da znaju više nego što bi željele (11). Ipak, treba imati na umu da adekvatna količina kvalitetnih informacija može smanjiti strah od nepoznatog i pripremiti trudnice na porod (12).

S obzirom na to da je korištenje interneta u trudnoći tema koja sve više okupira stručnjake u tom području, a neistražena je u kontekstu hrvatskog zdravstvenog sustava, cilj ovog rada je dati pregled relevantnih istraživanja u tom području, kao i smjernice za buduća istraživanja.

## RAZLOZI KORIŠTENJA INTERNETA U TRUDNOĆI

Razlozi zbog kojih se trudnice upuštaju u pretraživanje zdravstvenih tema na internetu su mnogobrojni. Kao vrlo česti razlozi koje trudnice navode su brzina i jednostavnost dolaženja do informacija, fleksibilnost pristupa interne-

whereas some European studies report a rate of as high as 98% (2), which indicates that a large percentage of pregnant women actively use the Internet for health-related searches. Larsson (7) found that the prevalence of Internet use for pregnancy-related information ranged from once to as many as 62 times per month, while Declercq, Sakala, Corry, and Applebaum (8) reported a median rate of six hours per month. In one study (9), the majority of pregnant women searched the Internet for information every week, and a somewhat smaller number searched every day. The majority of pregnant women use the Internet to search for health-related information less than one hour per day, but as many as approximately 40% use it more than one hour per day (10).

One concerning fact is that the majority of pregnant women do not feel ready to give birth. It is possible that internet use contributes to this, because the virtual world exposes pregnant women to a large amount of information that can create the impression that it is simple to find out absolutely everything on pregnancy and delivery. It is therefore possible that pregnant women today no longer fear the unknown factors related to delivery but rather the opposite: that they know more than they might want (11). However, we must bear in mind that having an adequate amount of high-quality information available can reduce fear of the unknown and prepare women for the process of giving birth (12).

Since the use of the Internet in pregnancy is a topic of increasing interest to experts in the field, while remaining unexplored in the context of the Croatian healthcare system, the goal of this article was to provide a review of the relevant studies in this field as well as guidelines for future research.

## REASONS FOR USING THE INTERNET IN PREGNANCY

Pregnant women engage in Internet searches on health-related topics for numerous reasons. Very common reasons reported by pregnant women include the speed and simplicity of acquiring information, the flexibility of Internet access, privacy, curiosity, the large amount of information

tu, privatnost, znatiželja, velika količina informacija na internetu, jednostavna terminologija i informacije do kojih se može doći besplatno i potreba da se trudnice uvjere da je sve u redu s trudnoćom (1,13-15). Kao prednost informiranja putem interneta trudnice navode i rjeđe negativno procjenjivanje od strane drugih korisnika, u odnosu na komunikaciju uživo s liječnikom ili bliskom osobom (16).

Osim korištenja interneta u svrhu proširivanja znanja, trudnice na internetu drugim korisnicima opisuju svoja iskustva, misli i osjećaje kako bi dobile podršku, ali i kako bi možda pomogle drugim trudnicama koje su u istoj situaciji (17). Podrška drugih osoba na internetu je pojedincima posebno važna kad su tjeskobni ili doživljavaju stres (18), tako da je moguće da isto vrijedi i za trudnice.

Faktori koji su povezani s traženjem zdravstvenih informacija tijekom trudnoće dijele se na facilitirajuće, odnosno one koji potiču pretraživanje, i inhibirajuće, koji smanjuju učestalost pretraživanja (14). Trudnice će se vjerojatnije upuštati u traženje informacija ako ih u tome podržavaju i ohrabruju bliske osobe, ako su znatiželjne i žele saznati što više informacija, ako su nekad osjećale da nisu dovoljno informirane o svom zdravstvenom stanju i to žele promijeniti te ako imaju potrebna znanja kako adekvatno pretraživati resurse. Ženama pretraživanje olakšava i potpora zdravstvenog sustava, dobar odnos s liječnikom i dobivanje kvalitetnih informacija (14). Inhibirajući faktori su oni zbog kojih je manje vjerojatno da će trudnice tražiti informacije. Jedan od tih faktora je sustav u kojem trudnice ne dobivaju dovoljno informacija od zdravstvenog osoblja, što ih dodatno obeshrabruje u pretraživanju. Ako trudnice općenito imaju teškoće u nalaženju informacija zbog manjka izvora, neiskustva u pretraživanju ili osjećaja da im je pretraživanje stresno, također su manje sklone tražiti informacije o zdravlju. Zanimljivo je da za dio trudnica okolina isto može biti inhibitor,

on the Internet, simple terminology and information that can be accessed free of charge, and the need to confirm that everything is alright with their pregnancy (1,13-15). An advantage reported by pregnant women regarding Internet use is also the less common negative assessments on part of other users in comparison with in-person communication with physicians or loved ones (16).

In addition to using the Internet to expand their knowledge, pregnant women also share their experiences, thoughts, and feelings with other online users in order to get support but also to perhaps help other women who find themselves in the same situations (17). Receiving support from others on the Internet is especially important to users in times of anxiety and stress (18), and the same is likely to hold for pregnant women.

Factors associated with searching for health-related information during pregnancy can be divided into facilitating factors, i.e. those that encourage searching, and inhibiting factors, i.e. those that reduce the incidence of searching (14). Pregnant women will be more likely to engage in searching for information if they are encouraged in this by persons close to them, if they are curious and want to find out more information, if they sometimes felt insufficiently informed on the state of their health and want to change that, and if they have the requisite knowledge to adequately search through the available resources. Searching is also facilitated by support from the healthcare system, a good relationship with the physician, and receiving high-quality information (14). Inhibiting factors are those that make it less likely that pregnant women will engage in pregnancy-related internet searches. One of these factors is a system in which pregnant women do not receive sufficient information from healthcare staff, which further discourages them in searching for the information themselves. If pregnant women have difficulties in finding information in general due to a lack of sources, being inexperienced in searching, or due to experiencing searching as stressful, they will also be less likely to search for health-related information. It is interesting to note that the environment can also be an inhibiting factor for some pregnant women, partially due to persons in their environment not being experienced in searching,

djelomično jer osobe iz okoline nisuiskusne u pretraživanju, ali i ako su te osobe prisutne na pregledima i preuzimaju u potpunosti na sebe informiranje i donošenje odluka u trudnoći (14).

Dio trudnica je nezadovoljan pregledima tijekom trudnoće jer ne zadovoljavaju u potpunosti njihove potrebe. Žene smatraju da se prvi pregled u trudnoći zakazuje prekasno i da su na početku trudnoće kontrole rjeđe nego bi one željele jer imaju puno pitanja za liječnike (19). Glavne kritike vezane uz preglede su dugo razdoblje između dva pregleda i kratko trajanje pregleda tijekom kojeg trudnice ne saznaju sve informacije koje ih zanimaju i ne osjećaju se dovoljno ugodno kako bi postavile sva pitanja koja imaju (20). Trudnice navode da puno češće koriste internet kao „prvu pomoć“ u razdoblju između pregleda kad su zabrinute i anksiozne zbog simptoma koje osjećaju, a neugodno im je učestalo kontaktirati liječnika kako bi saznale je li sve u redu (5). Također, trudnice nastoje biti što bolje pripremljene za pregled tako da traže informacije na internetu prije nove kontrole kod liječnika (1,21). Nakon pregleda traže informacije na internetu kako bi provjerile neke informacije koje su čule od liječnika, bolje shvatile te informacije, saznale više o temi o kojoj su razgovarale na pregledu i kako bi se uvjerile je li nužno da traže drugo mišljenje, osim onog koje im je dao liječnik (2,13,22). Neke trudnice češće koriste internet za informiranje kad se na neke njihove probleme ne reagira jer nisu opasni za dijete, ali narušavaju njihovu kvalitetu života (5). Sve navedeno neki su od razloga zbog kojih trudnice koriste internet za dobivanje zdravstvenih informacija, a ukazuju na problematiku vezanu uz preglede u trudnoći i manjak pažnje i podrške od dijela zdravstvenog sustava za neke trudnice. Međutim, zanimljivo je istraživanje Lagan i sur. (21) u kojem je visok postotak trudnica pretraživao internet prije i nakon pregleda, ali ih se 80 % izjasnilo da to nije povezano s pregledom. Po-

but also if these persons are present at medical examinations and completely take upon themselves the role of finding information and making decision regarding the pregnancy (14).

Some pregnant women are unhappy with medical examinations during pregnancy because they do not fully satisfy their needs. Women believe that the initial examination in pregnancy is arranged too late and that checkups at the start of the pregnancy are more sporadic than they would prefer, since they have many questions for physicians (19). The main criticisms associated with the examinations are the long periods of time between two examination and the short duration of the examination, during which pregnant women do not have the time to find out all the information that interests them and do not feel comfortable enough to ask all the questions that they have (20). Pregnant women report often using the Internet as a “first-aid” solution in the period between examinations when they are worried or anxious because of the symptoms they are experiencing but too embarrassed to repeatedly contact the physician to ask if everything is alright (5). Additionally, pregnant women try to be as well-prepared for an examination as possible, so they search for information online before a new medical checkup (1,21). After an examination, they search for information on the Internet to double-check what the physician has told them, understand it better, find out more about a topic that was broached during the examination, or to decide whether they should ask for a second option in addition to the one given to them by their physician (2,13,22). Some pregnant women use the Internet to inform themselves when some of their issues are ignored because they are not dangerous for the child, despite reducing the woman’s quality of life (5). All the above represents some of the reasons why pregnant women use the Internet to find health-related information, and indicates the issues surrounding medical examinations during pregnancy as well as a lack of attention and support on part of the healthcare system towards some pregnant women. However, in an interesting study by Lagan et al. (21), a high percentage of pregnant women reported searching the Internet before and after the

trebna su dodatna istraživanja kako bi se dobila jasnija slika o ovom području, kao i formiralo preporuke liječnicima ako postoji potreba za drugačijom strukturom pregleda i promjenama u komunikaciji s pacijenticama. Detaljniji razlozi korištenja pojedinih izvora informacija na internetu bit će opisani u nastavku teksta.

## IZVORI INFORMACIJA O TRUDNOĆI I STRATEGIJE PRETRAŽIVANJA

Trudnice danas na raspolaganju imaju velik broj izvora iz kojih mogu dobiti odgovore na svoja pitanja o trudnoći, a to vrijedi i za izvore informacija koji se mogu naći na internetu. Većina žena do informacija dolazi tako da upiše pojam koji ih zanima ili neko pitanje u tražilicu na internetu (20), dok manji broj koristi specifične stranice koje su im dobro poznate i učestalo ih posjećuju (23,24). Takve stranice trudnicama je uglavnom preporučio član obitelji ili prijatelj, a manjem broju i liječnik (10) ili su za njih saznale u medijima (25). Većina trudnica informacije pretražuje kod kuće putem računala, a dio njih i putem mobitela (10).

Velik broj trudnica koristi internet stranice bolnica ili zdravstvenih institucija, kao i forume i blogove namijenjene trudnicama (2). Žene forume vide kao internet prostor u kojem mogu anonimno iznositi svoje intimne probleme ili mišljenja, tražiti direktne upute kako da postupe u nekoj situaciji i provjeriti je li sve u redu s njihovom trudnoćom s nadom da ih drugi neće kritizirati ili osuđivati kao što se često može dogoditi u komunikaciji uživo (5,26). Za dio trudnica su forumi važni i jer one tamo mogu dobiti podršku i savjete drugih žena, koje možda ne dobivaju od svoje okoline (20). Ipak, na forumima se često mogu naći uznemirujuće priče vrlo kompliciranih trudnoća ili poroda s teškim ishodima za majku ili dijete. Prescott i Mackie (1) zaključuju da trudnice koje nemaju komplikacije u trudnoći rijetko

medical examination, but with 80% of the participants reporting that the searches were not linked to the examination. Further research is needed to get a clearer picture on this topic and form recommendations for physicians if there is a need for a different checkup structure and changes in communication with patients. More detailed explanations of reasons for using specific sources of information found online will be presented below.

## SOURCES OF INFORMATION ON PREGNANCY AND SEARCH STRATEGIES

Today, pregnant women have a large number of sources available that can provide answers to their questions on pregnancy, including information sources found on the Internet. Most women find such information by entering a search term or question that interests them into an internet search engine (20), while a smaller number uses specific webpages that they visit often and are familiar with (23,24). Such webpages have usually been recommended by a member of the family or a friend, and in rarer cases have been recommended by a physician (10) or the media (25). Most pregnant women conduct internet searches at home on a computer, and some also use a smartphone (10).

Many pregnant women browse the webpages of hospitals or healthcare institutions as well as forums and blogs aimed at pregnant women (2). Women view forums as internet spaces where they can anonymously express their intimate problems or opinions, ask for direct instructions on how to act in a given situation, and check if everything is alright with their pregnancy with the expectation that others will not criticize or judge them, as can often happen in face-to-face communication (5,26). For some pregnant women, forums are also important because they represent a place where they can obtain support and advice from other women, which might not be available in their environment (20). However, forums often contain upsetting stories about very complicated pregnancies or deliveries with severe outcomes for the mother or child. Prescott and Mackie (1) conclude that pregnant women without pregnancy-related

posjećuju forume jer nemaju potrebu napisati da je s njima sve u redu i na taj način možda dovesti do dodatne tuge ili zabrinutosti trudnica koje doživljavaju neke probleme. Stoga je na forumima veća zastupljenost zastrašujućih sadržaja, zbog čega su forumi stranice koje dovode do najviše zabrinutosti kod trudnica (9). Istraživanja pokazuju da su neke trudnice koje koriste forume sklonije mijenjati svoje ponašanje i navike u trudnoći (2), a dio ih nakon korištenja foruma ima višu svijest i znanje o zdravlju (17).

Trudnice često koriste i komercijalne stranice na kojima se mogu pronaći razne trudničke teme (10), ali im je uglavnom u interesu prodaja proizvoda, a ne nužno proširivanje znanja trudnica. Zanimljivo je da trudnice preferiraju takve stranice više od onih koje vode neprofitne organizacije (25,27). Moguće objašnjenje je da proizvode na komercijalnim stranicama uglavnom reklamiraju liječnici, tako da trudnice mogu imati dojam da je taj sadržaj medicinski relevantniji.

Sve je učestalije i korištenje društvenih mreža, kao i kanala s edukativnim video sadržajima (10). Uz to što im društvene mreže omogućuju da redovito saznaju zanimljive i praktične informacije o trudnoći, također trudnicama služe kao mjesto na kojem one mogu dijeliti svoja iskustva u trudnoći i prezentirati novi dio svojeg samopoimanja, onog kao majke (28). Dio trudnica ih koristi i jer ih relaksiraju i omogućuju im da redovito komuniciraju s bliskim osobama, ali i šire socijalnu mrežu (29). Neke trudnice društvene mreže koriste i kako bi se educirale (19) što može biti problematično ako takav sadržaj nije medicinski točan i pouzdan. S druge strane, kao prednost videomaterijala na internetu trudnice spominju to da ga mogu ponovno pregledavati ako nešto ne shvate tijekom prvog pretraživanja (30). Važno je naglasiti da trudnice koje gledaju videosnimke poroda kako bi se educirale posljedično osjećaju ekstremno visoku razinu straha (11).

complications rarely visit forums because they do not feel the need to simply write that they are doing fine, thus perhaps leading to additional sorrow and anxiety in pregnant women who are experiencing pregnancy-related problems. This leads to an overrepresentation of upsetting content in forums and to forums being the type of webpage that leads to the most anxiety in pregnant women (9). Studies have shown that some pregnant women who use forums are more prone to changing their behavior and habits in pregnancy (2), and some of them show better awareness and knowledge on health after using forums (17).

Pregnant women also often use commercial webpages where various pregnancy-related topics can be found (10), but these pages are mostly focused on selling a product rather than expanding the knowledge of pregnant women. It is interesting to note that pregnant women prefer such webpages to those hosted by nonprofit organizations (25,27). A possible explanation is that products on commercial webpages are mostly advertised by physicians, which can lead to the impression that the contents are more medically relevant.

The use of social networks is also on the rise, as well as channels with educational videos (10). In addition to enabling pregnant women to regularly find out interesting and practical information about pregnancy, social networks also serve as a place where pregnant women can share their experiences in pregnancy and present the new aspect of their self-image, that of a mother (28). Some pregnant women use social networks because they also find it relaxing and because the use of social networks allows them to regularly communicate with persons close to them as well as expand their social network (29). Some pregnant women also use social networks for educational purposes (19), which can be problematic if the contents are not medically accurate and reliable. On the other hand, an advantage of video materials on the Internet reported by pregnant women is that they can view it repeatedly if they did not understand something on the first viewing (30). It is important to emphasize that pregnant women who watch videos of deliveries to educate themselves consequently experience an extremely high level of fear (11).

Trudnice učestalo koriste i mobilne aplikacije za trudnoću. Mobilne aplikacije trudnice doživljavaju korisnima jer im javljaju obavijesti vezane uz razvoj fetusa, zdravu prehranu ili teme važne za pojedini tjedan trudnoće (31). Aplikacije koje su usmjerene na informacije o razvoju mogu biti korisne jer smiruju trudnice pružanjem informacija da su njihovi simptomi uobičajeni i normalni (30). Ipak, one možda mogu dovesti i do povišenije tjeskobe ako trudnice u određenom trenutku ne doživljavaju neki osjet koji je predviđen za taj tjedan trudnoće, a to ne mora nužno značiti da postoji neki problem. Neke trudnice aplikacije koriste i kako bi jednostavnije pratile svoju tjelesnu težinu, aktivnost, raspoloženje, raspored pregleda, rezultate testiranja, itd. (30). U jednom istraživanju (32) nastojalo se otkriti više detalja o tome kakav je idealni izvor informacija za trudnice. One su se složile da je to upravo personalizirana mobilna aplikacija koja sadrži linkove na provjerene internet stranice putem kojih mogu dobiti brze i jednostavne odgovore. Htjele su da aplikacija bude usklađena s njihovom lokacijom i pruža informacije o aktualnim događanjima za trudnice u njihovoj blizini.

Vrlo važno pitanje je kako trudnice znaju da su pronašle dovoljno informacija na temu o kojoj su pretraživale internetske sadržaje. Kao najčešći odgovor žene navode nalaženje identične informacije u više izvora na internetu i kad nakon nekog vremena ne nalaze nove informacije (1,20) što može biti problematično ako je ta informacija netočna. Vrlo visok broj trudnica, oko 80 %, posjeti više od jedne internet stranice kad su u potrazi za nekom informacijom (23). Također, trudnice prestaju s pretraživanjem kad osjećaju da su zadovoljne informacijom koju su pronašle (20) ili imaju dojam da su ih informacije smirile (1). Prekidaju pretraživanje i kad im informacije više ne pomažu (1). Neke žene doživljavaju izazovnim prestati čitati internet sadržaje i zaustaviti daljnje pretraživanje. Jedna sudionica u istraživanju Prescott

Pregnant women also often use pregnancy-related smartphone applications. Smartphone applications are perceived as useful because they offer notifications associated with the development of the fetus, healthy diet, or topics of importance at certain weeks of the pregnancy (31). Applications focused on information of fetal development can have a useful calming effect by presenting information that shows that the symptoms the pregnant women are experiencing are common and normal (30). However, they might also lead to an increase in anxiety if the woman does not experience a feeling or symptom that is predicted for a given week of the pregnancy, despite that not necessarily being an indication of a problem. Some pregnant women also use the application to simplify the monitoring of their body weight, activity, moods, checkup schedule, test results, etc. (3). One study (32) attempted to find out more details on what would represent an ideal source of information for pregnant women. The participants agreed that this would be a personalized mobile application that contained links to reliable webpages that provide quick and simple answers. They also wanted the application to be synchronized with their location and provide information on relevant events for pregnant women in their area.

A very important question is how pregnant women know when they have found enough information on the topic they were searching for. The most common answer provided by women is finding identical information from several sources on the Internet and when no new information has been found for some time (1,20), which can be problematic if the information in question is incorrect. A very high ratio of pregnant women, approximately 80%, visit more than one webpage in search for a given piece of information (23). Furthermore, pregnant women stop searching when they feel they are satisfied with the information they have found (20) or when they are under the impression that the information has calmed them (1). They also discontinue the search when the information found is no longer helpful (1). Some women find it challenging to stop reading Internet content and continuing to search. One participant in the study by Prescott and Mackie



i Mackie (1) navela je da joj je teško prestati s pretraživanjem ako je jako uznemirena i anksiozna, iako je svjesna da daljnje traženje informacija možda pogoršava tjeskobu i nesigurnost koju osjeća. Situacija u kojoj trudnice nalaze različite informacije iz više izvora i nisu sigurne koja je ispravna također može dovesti do neprestanog daljnjeg pretraživanja i posljedično povišene anksioznosti kod trudnice. Također, zabrinjavajući je nalaz u istraživanju Lupton (30). Iako dostupnost interneta putem mobitela ima svojih prednosti, dio trudnica opisuje kako koristi mobitel za neprestano pretraživanje interneta, posebno tijekom noći ako postanu zabrinute oko neke trudničke teme.

## TEME PRETRAŽIVANJA U TRUDNOĆI

Istraživanja izvještavaju o velikom broju tema koje su u fokusu interesa trudnica i o kojima one pretražuju internet. Većina istraživača nalazi da je tema o kojoj se najviše pretražuje razvoj fetusa (2,7,18). Važne teme su i dijagnostika i testiranja u trudnoći, komplikacije u trudnoći, fiziologija i stadiji trudnoće i poroda, promjene u trudnoći, životni stil trudnica, informacije o liječnicima, partnerski odnosi te psihološka pomoć za trudnice (2,7,10). Visok postotak trudnica pretražuje informacije i o teratogenima (22) i uzimanju lijekova u trudnoći (21). Trudnice često traže informacije i o prehrani u trudnoći (33), kao i o proizvodima za majke i djecu (7). Više znanja o procesu trudnoće, djetetu i porodu kod majke dovodi do višeg samopouzdanja, osjećaja kontrole i sigurnosti u roditeljsku kompetentnost, kao i smirenosti ako na temelju informacija trudnica spozna da su ona i dijete zdravi (1,9).

Teme o kojima trudnice pretražuju internet donekle se razlikuju ovisno o tromjesečju u kojem se nalaze. U prvom trimestru aktivno traže informacije kojima žele potvrditi da se dogodilo začeće i prate sve simptome koji ukazuju na to

(1) stated that she had a hard time stopping searching if she was very upset and anxious, although she was aware that further information searches may just increase the anxiety and insecurity she felt. Situations in which pregnant women find different information from different sources and are unsure which is correct may also lead to constant further searching and consequently to increased anxiety in pregnant women. Furthermore, the results of the Lupton study (30) are concerning. Although the availability of the Internet via smartphone has its advantages, some pregnant women described using their phone for constant online searches if they become concerned about a pregnancy-related topic, especially during the night.

## SEARCH TOPICS IN PREGNANCY

Studies have reported that there is a large number of topics that interest pregnant women and for which they search the Internet. Most researchers have found that fetal development is the most-searched topic (2,7,18). Important topics also include diagnosis and testing in pregnancy, pregnancy complications, physiology and stages of pregnancy and delivery, changes in pregnancy, lifestyle of pregnant women, information on physicians, the relationship with the partner, and psychological assistance for pregnant women (2,7,10). A high percentage of pregnant women also searches for information on teratogens (22) and taking medication in pregnancy (21). Pregnant women often search for information on healthy diet during pregnancy as well as products for mothers and children (7). A higher level of knowledge on the process of pregnancy, the child, and delivery leads to higher self-confidence in the mother as well as a feeling of control, confidence in parental competence, and calmness, if the mother finds out that she and the child are healthy based on the information she finds (1,9).

Topics for which pregnant women search the Internet differ somewhat based on the trimester of the pregnancy. In the first trimester, they actively search for information that confirms whether a child has been conceived and follow all the symp-

da je sve u redu s trudnoćom. Traže i informacije o pobačaju i promjenama koje se događaju u svakodnevnom životu trudnice. U drugom trimestru su više usmjerene na dvosmislene simptome koji mogu značiti da postoje neke komplikacije, kao i na informacije o kretanju djeteta, ali i brigu o sebi i djetetu. Treći trimestar prolazi u pripremama za porod tako da su njihove potrebe za informacijama usmjerene na tu tematiku, kao i strah od poroda (5). Kako se približava termin poroda, učestalije se pretražuje o metodama manje bolnog poroda, najboljem mjestu za porod, zdravlju djeteta i dojenju (2).

Postoje i razlike u temama pretraživanja koje su u fokusu interesa trudnicama koje su trudne prvi put i onima koje imaju iskustvo prethodnih trudnoća. Prvorotkinje traže više informacija o simptomima koji ukazuju na trudnoću, razvoju fetusa, fizičkoj aktivnosti, komplikacijama u trudnoći, seksualnosti tijekom trudnoće, načinima poroda i metodama za smanjivanje boli tijekom poroda te prehrani i brizi za dijete (33).

Dio trudnica, 33 %, navodi da su tijekom trudnoće htjele dobiti više informacija o tome kako da kvalitetno brinu o sebi i djetetu. Htjele su saznati više o procesu dojenja, lakšem i bržem oporavku nakon poroda i zdravlju nakon poroda (27). Također, htjele su dobiti više informacija koje su usmjerene na jačanje njihovih kompetencija kao novih roditelja, a ne samo one usmjerene na djecu (32). Te informacije bi voljele saznati od stručnjaka koji im istovremeno pružaju podršku i propituju njihove potrebe za informacijama (34).

## POUZDANOST INFORMACIJA O TRUDNOĆI NA INTERNETU

Pojedinci koji češće koriste internet kako bi pronašli zdravstvene informacije više vjeruju tim informacijama, nego onima koje im

toms that indicate whether everything is alright with the pregnancy. They also search for information on abortion and changes that happen in the everyday life of the pregnant woman. In the second trimester, they are more focused on ambiguous symptoms that can indicate the presence of some complications, on information about the child's movements, and on information about caring for themselves and the child. The third trimester is focused on preparations for delivery, so their need for information is focused on that topic as well as on fear of giving birth (5). As the term approaches, searches on methods for less painful delivery, best places for childbirth, infant health, and breastfeeding become more prevalent (2).

There are also differences in search topics between women who are pregnant for the first time and those who have previously experienced pregnancy. Primiparae search for more information on symptoms that indicate pregnancy, on fetal development, physical activity, pregnancy complications, sexuality during pregnancy, methods of childbirth and for reducing pain during childbirth, and infant feeding and care (33).

A portion of pregnant women, 33%, reported that they wanted to find out more information on how to properly care for themselves and the child during pregnancy. They wanted to find out more about the breastfeeding process, easier and faster recovery after childbirth, and health after childbirth (27). They also wanted more information aimed at strengthening their competencies as new parents and not just information focused on the child (32). They also reported that they wanted to learn this kind of information from experts, who simultaneously offer them support and question their need for information (34).

## RELIABILITY OF PREGNANCY-RELATED INFORMATION ON THE INTERNET

Individuals who use the Internet more often to find health-related information trust such information more than information provided by the

pruža liječnik i internet smatraju korisnijim izvorom (35). Trudnice od okoline dobivaju brojne savjete i okružene su raznim izvorima informacija, a u internetskom prostoru je vrlo izazovno raspoznati koje informacije su točne i pouzdane i kojima se može u potpunosti vjerovati (36). Postoje milijuni internet stranica koje pokrivaju raznolike teme vezane uz trudnoću, no samo 4 % tog sadržaja su kreirali ili sponzorirali stručnjaci (37) što je vrlo problematično. Dio sadržaja na internetu koji je namijenjen trudnicama je netočan, može zbuniti žene i nije znanstveno utemeljen (38). Neke trudnice navode kako se učestalo susreću s informacijama koje nisu konzistentne, potpune ili ne postoje reference na izvor informacije (11) pa je stoga važno pitanje koliko trudnice informacije na internetu smatraju pouzdanima.

Istraživanja daju oprečne nalaze vezane uz to koliko trudnice vjeruju informacijama o zdravlju koje pronađu na internetu. Dok dio istraživanja izvještava da trudnice smatraju kako informacije na internetu nisu pouzdane (1,20), druga pak pokazuju da trudnice u poprilično visokom broju vjeruju informacijama koje nađu (7,27,39). Dio trudnica pokazuje kritičnost prema informacijama i svjesne su da informacije koje se nalaze na internetu nisu univerzalno korisne za svaku trudnicu (20).

Samo 11 % trudnica je svjesno pokazatelja prema kojima se može znati je li internet stranica kvalitetna, ali ipak ih 70 % može navesti barem jedan od indikatora. Ovaj nalaz je alarmantan jer se dio trudnica može smatrati ekspertima u pretraživanju interneta, a zapravo ne znaju prepoznati netočan sadržaj (21). Trudnice vjeruju stranicama po kojima pišu eksperti i onima koje su najpoznatije i najčešće se koriste (40). Često ne provjeravaju postoje li reference na kraju teksta (10) koje bi ukazivale na to da je sadržaj utemeljen na činjenicama (41), kao ni datum objave i koliko je informacija još relevantna (21).

physician and consider the Internet a more useful source of information (35). Pregnant women receive a large amount of advice from their environment and are surrounded by various sources of information, but it is very challenging to discern which information on the Internet is correct and reliable and can be trusted completely (36). There are millions of webpages that cover various topics related to pregnancy, but only 4% of these contents were created or sponsored by experts (37), which is very problematic. Some of the online content aimed at pregnant women is incorrect, can be confusing, or has not been scientifically established (38). Some pregnant women reported often encountering information that is inconsistent, incomplete, or lack references to sources (11), so whether pregnant women consider online information to be reliable is an important question.

Studies have provided contradictory results related to how much pregnant women trust health-related information found on the Internet. While some studies report that pregnant women do not believe online information to be reliable (1,20), others show that a fairly high ratio of pregnant women believe the information they find online (7,27,39). Some pregnant women display a critical approach to online information and are aware that information found on the Internet is not universally useful to every pregnant woman (20).

Only 11% of pregnant women are aware of the indicators that show whether an Internet page is of high quality, but 70% are still able to list at least one of the indicators. This finding is alarming because some pregnant women could consider themselves experts in searching the Internet but in fact be unable to recognize inaccurate contents (21). Pregnant women believe webpages written by experts and those webpages that are most famous and most used (40). They often do not check for references at the end of the text (10), which would indicate that the contents are based on facts (41), nor do they check the publication date and whether the information is still relevant (21).

Pregnant women are more inclined to believe webpages of hospitals or other institutions of the

Trudnice više vjeruju stranicama bolnica ili drugih institucija zdravstvenog sustava (20) jer znaju da na njima objave pišu stručnjaci i da su temeljene na činjenicama, a ne samo na mišljenjima drugih trudnica (1). Primjerice, većinu sadržaja na forumima i društvenim mrežama pisale su trudnice koje uglavnom nemaju medicinsko obrazovanje i nisu detaljno upoznate sa svim okolnostima i kliničkom slikom drugih žena. Donošenje zdravstvenih odluka na temelju isključivo informacija koji se nalaze na stranicama koje ne vode stručnjaci može biti rizično, a netočne i neprovjerene informacije trudnicama mogu dati lažan osjećaj sigurnosti u situacijama kada bi trebale potražiti stručnu pomoć (11). Ipak, neke trudnice cijene tuđa iskustva i manje im je važno jesu li informacije koje čitaju u tom kontekstu točne (17).

Žene često provjeravaju točnost informacija koje nađu s nekom osobom kojoj vjeruju ili pak s drugim izvorom koji nije internet (21). To je posebno učestalo kad nađu različite informacije na više stranica i nisu sigurne kojem izvoru vjerovati (32). Također, češće dodatno provjeravaju informacije koje su našle na internetu, nego što to rade s informacijama koje su dobile od stručnjaka ili bliskih osoba (1).

Istraživanja daju oprečne nalaze oko diskutiranja o informacijama koje trudnice pronađu na internetu sa stručnjacima koji vode brigu o njihovoj trudnoći. Lagan i sur. (20) navode da većina žena razgovara s liječnikom o tim informacijama, dok Larsson (7) opisuje suprotno i pokazuje da većina trudnica ne dijeli informacije koje pronađe na internetu sa stručnjacima. Neke trudnice su bile spremne pitati liječnika o informacijama koje su našle na internetu, ali nisu htjele otkriti liječniku izvor tih informacija (17). Ipak, u istraživanju Lagan i sur. (21) većina trudnica je navela da je diskusija o informaciji nađenoj na internetu s liječnikom dobro prošla. Pacijenti često očekuju od liječnika da će oni potaknuti razgovor o pretraživanju zdravstvenih informacija na internetu (42), a trud-

healthcare system (20) since they know that the texts on these webpages are written by experts and based on facts, not just the opinions of other pregnant women (1). For example, most content found on forums and social networks has been written by pregnant women who mostly do not have a medical education or detailed knowledge of all the circumstances and the clinical picture of other women. Making health-related decisions based exclusively on information found on webpages not written by experts can be risky, and inaccurate and unconfirmed information can give pregnant women a false sense of security in situations in which they should seek professional assistance (11). However, some pregnant women appreciate reading the experiences of others and consider it less important whether all the information in that context is fully accurate (17).

Women often check the accuracy of information they find by consulting a person they trust or using some source other than the Internet (21). This is especially common when they encounter different information on different pages and are not sure which source to trust (32). They are also more likely to check information found on the Internet than information received from experts or loved ones (1).

Studies have found contradictory results on whether pregnant women discuss information found on the Internet with experts managing their pregnancy. Lagan et al. (29) reported that most women discuss such information with their physician, whereas Larsson (7) described the opposite and showed that most pregnant women do not share information found on the Internet with experts. Some pregnant women were prepared to ask their physician about information they found on the Internet, but were not willing to reveal the source of the information to the physician (17). However, in a study by Lagan et al. (21) most pregnant women reported that discussing information found on the Internet with their physician went well. Patients often expect the physician to initiate the conversation on searching for health-related information online (42), and pregnant women reported that they would consider

nice navode da bi stranice koje im preporuča njihovi liječnici smatrale pouzdanima (32,43).

webpages recommended by their physicians to be reliable (32,43).

## KARAKTERISTIKE TRUDNICA POVEZANE S PRETRAŽIVANJEM INTERNETA

## CHARACTERISTICS ASSOCIATED WITH SEARCHING THE INTERNET IN PREGNANT WOMEN

### Demografske i opstetričke karakteristike

### Demographic and obstetric characteristics

Istraživanja pružaju nalaze koji ukazuju na važnost nekih demografskih i opstetričkih karakteristika trudnica za upuštanje u pretraživanje zdravstvenih informacija na internetu. Merrel (44) navodi da je za pretraživanje informacija na internetu važno da trudnice imaju istraživački stav i da su motivirane za prikupljanje kvalitetnih informacija zbog djetetove i vlastite dobrobiti.

Studies have provided findings that indicate the importance of some demographic and obstetric characteristics in pregnant women with regard to engagement in searching for health-related information on the Internet. Merrel (44) stated that when searching for information online it is important that pregnant women have a research-focused attitude and that they are motivated to find high-quality information for their own wellbeing and that of their child.

Iako u istraživanju Grimes i sur. (27) nisu nađene dobne razlike u pretraživanju interneta kod trudnica, one mlađe od 25 i starije od 34 godine internet koriste kao najčešći izvor informacija. S druge strane, De Santis i sur. (22) nalaze da je dob trudnica povezana s korištenjem interneta i da one u dobi od 26 do 35 godina najviše pretražuju internet. Nakon njih, internet u većem broju pretražuju trudnice starije od 36 godina, dok su one mlađe od 25 godina najmanje aktivne u traženju zdravstvenih informacija. Sukladno tom istraživanju, Fredriksen i sur. (17) nalaze da 90 % žena u dobi od 25 do 34 godine koristi internet u svrhu dobivanja zdravstvenih informacija.

Although a study by Grimes et al. (27) did not find age-related differences in searching the Internet in pregnant women, those younger than 25 and older than 34 use the Internet as the most common source of information. On the other hand, De Santis et al. (22) found that age in pregnant women was associated with Internet use and that women aged 26 to 35 use online searches the most. After this group, pregnant women above 36 year of age were the next most likely to engage in online searching, whereas those younger than 25 were least active in searching for health-related information. Congruently, Fredriksen et al. (17) found that 90% of women aged 25 to 34 used the Internet to find health-related information.

Trudnice koje su visoko obrazovane češće koriste internet za pretraživanje informacija o zdravlju (27), vjerojatno jer imaju više iskustva s tehnologijama i snalažljivije su u korištenju interneta za traženje zdravstvenih informacija, i posljedično, u procjeni pouzdanosti i primjeni informacija (21). Osobe koje su obrazovanije češće provjeravaju izvore i reference iz kojih dolaze informacije na internetu (10). Ipak, neka

Highly-educated pregnant women are more likely to use the Internet to search for health-related information (27), likely due to having more experience with technology and using the Internet to find health-related information, and thus also more experience in assessing the reliability and application of information (21). Persons with higher education are more prone to checking sources and references cited in information found on the Internet (10). However, some stud-

istraživanja (7,25) ne nalaze razlike u pretraživanju s obzirom na obrazovanje trudnica.

Paritet je također jedan od prediktora učestalijeg pretraživanja interneta, a neka istraživanja nalaze da je to i najznačajniji prediktor (45). Žene koje su trudnice prvi put sklonije su traženju informacija na internetu u odnosu na one koje već imaju iskustvo poroda (2). Logično je da prvotkinje imaju potrebu biti dobro informirane o stanju u kojem se nalaze i zato je internet jedan od kanala putem kojeg dolaze do informacija o trudnoći i zdravlju. Trudnoća je za te žene novo, nepoznato i izazovno životno razdoblje i one žele biti sigurne da je dijete zdravo i teže tome da informirano preuzmu ulogu majke (46). Ipak, zanimljivo je da neki istraživači ne nalaze razlike u pristupu informiranju trudnica na internetu ovisno o paritetu (1,22).

Tijekom tromjesečja, s približavanjem poroda, dolazi do pada u učestalosti pretraživanja informacija na internetu. Najveći broj trudnica pretražuje informacije na internetu u prvom tromjesečju, a zatim dolazi do naglog pada u pretraživanju u drugom tromjesečju (6). Larsson (7) navodi da većina trudnica traži informacije na internetu na početku trudnoće, a manji broj podjednako u svim tromjesečjima. Početak trudnoće je razdoblje prepuno pitanja i neizvjesnosti za trudnice tako da je logično da u to vrijeme najviše vremena provode u informiranju o trudnoći.

Trudnice koje imaju komplikacije u trudnoći su izrazito ranjiva skupina i one učestalo traže informacije o trudnoći (33), kao i trudnice koje se razbole tijekom trudnoće. One često pretražuju informacije na internetu u trenutku kada još nisu sigurne da imaju određenu dijagnozu jer nisu dobile potvrdu s pretraga ili imale pregled na kojem će se dijagnoza eventualno potvrditi. Nakon što dobiju potvrdu dijagnoze, na internetu mogu pronaći detaljnije informacije o specifičnom stanju u kojem se nalaze u odnosu na pisane materijale i informacije koje dobiju na

ies (7,25) found no differences in searching habits based on education in pregnant women.

Parity is also a predictor for searching the Internet more often, and some studies found it was the most significant predictor. Women who are pregnant for the first time are more prone to searching for online information compared with those who already experienced childbirth (2). It is logical that primiparae feel the need to be well-informed about the state they are in, and the Internet is one of the channels they use to find information on pregnancy and health. For these women, pregnancy is a new, unknown, and challenging phase in their lives, and they want to make sure the child is healthy and strive to be well-informed when taking up the role of a mother (46). However, it is interesting that some researchers did not find any parity-dependent difference in the approach to finding information (1,22).

There is a reduction in the frequency of online searches during the pregnancy, as the moment of delivery approaches. The number of pregnant women engaging in online searches is highest in the first trimester, and there is a sharp drop in search frequency in the second trimester (6). Larsson (7) reports that most pregnant women search for information on the Internet at the start of the pregnancy, and a smaller number searches at approximately equal rates in all trimesters. The start of a pregnancy is a period filled with questions and uncertainty for pregnant women, so it is logical that this is the period they spend the most time searching for pregnancy-related information.

Women with complications in pregnancy are an extremely vulnerable group, and they frequently search for information about pregnancy (33), as do pregnant women who become sick during pregnancy. They often search for online information at the point when they are still not sure of a given diagnosis because they are waiting for test results or an examination that will potentially confirm the diagnosis. After the diagnosis is confirmed, they can find more detailed information on the Internet on the specific state they are in

pregledu, što im je posebno važno ako imaju neku komplikaciju koja je rijetka i manje poznata (13). Mnoge trudnice žele i potvrdu da je tretman koji primaju najbolja opcija koja postoji tako da se na internetu informiraju o liječenju. Osim što koriste internet kao dodatan izvor informacija o svom zdravstvenom stanju, od drugih trudnica traže i potporu i suosjećanje. Spoznaja kako se druge osobe nose s nekom teškom situacijom u kojoj se trudnica trenutno nalazi može biti od velike pomoći te smanjiti osjećaj samoće i stresa, posebno ako razmatra opciju pobačaja ili ima manjak podrške od liječnika (13). Trudnice koje su u prethodnoj trudnoći imale neke komplikacije, u idućoj trudnoći internet doživljavaju korisnim za dobivanje podrške (47). Također, trudnice koje su u prošloj trudnoći osjećale da nisu bile informirane o zdravlju koliko su željele, u sljedećoj nastoje biti informiranije (14).

## Zdravstvena pismenost

Zdravstvena pismenost odnosi se na stupanj u kojem se pojedinac upušta u potragu za zdravstvenim informacijama, koliko lako pronalazi informacije, procesuiru ih, procjenjuje, i konačno, koliko ih razumije i na temelju njih kompetentno donosi odluke o zdravlju (20,27). Uz tehnološku pismenost, zdravstvena pismenost je posebno važna u današnje doba, kad su žene okružene raznim informacijama o trudnoći i teško je procijeniti koje su točne i relevantne. To da postoji velika količina informacija koje su dostupne trudnicama ne bi se trebalo smatrati faktorom koji je dovoljan pokazatelj da su one kvalitetno informirane jer možda neke od tih informacija ne razumiju. Pacijenti uglavnom trebaju stručnu pomoć s pojašnjenjem informacija o zdravlju (48) što ukazuje na važnost uključenosti zdravstvenih djelatnika u proces informiranja pacijenata na internetu.

Značajno veći postotak žena koje imaju visoku zdravstvenu pismenost koristi internet za

compared with written materials and information they receive at the examination, which is especially important if they have a complication that is rarer and less well known (13). Many pregnant women also want confirmation that the treatment they are receiving is the best possible option, and thus use the Internet to inform themselves on the treatment. In addition to using the Internet as an additional source of information on their medical state, they also search for support and empathy from other pregnant women. The realization that other persons are also coping with the difficult situation they themselves are in can be very helpful and reduce the feeling of loneliness and stress, especially if the woman is considering abortion or lacks proper support from physicians (13). Pregnant women who experienced complications in a previous pregnancy consider the Internet useful in finding support (47). Additionally, pregnant women who felt they had not been as informed regarding health as they would have wanted during a previous pregnancy will try to be more informed in the current one (13).

## Health literacy

Health literacy refers to the level to which an individual engages in searching for health-related information, how easily they obtain, process, assess, and understand such information, and ultimately how competently they make decision on health based on this information (20,27). In addition to technological literacy, health literacy is especially important today, when women are surrounded by various information on pregnancy, the accuracy and relevance of which it is difficult to assess. The existence of large amounts of information available to pregnant women should not be considered a factor that is a sufficient indicator of them being well-informed, since it is possible that they do not understand some of the information. Patients generally need professional help to clarify health-related information (48), which indicates the importance of the inclusion of healthcare workers in the process on informing patients via the Internet.

A significantly higher percentage of women with a high health literacy uses the Internet to find infor-

informiranje o trudnoći, nego onih koje imaju nisku pismenost (49). Zdravstvena pismenost razvija se traženjem i razmjenjivanjem informacija (50) tako da je važno da trudnice dijele informacije koje pronalaze s osobama u okolini, posebice stručnjacima. Razina zdravstvene pismenosti kod žena ima efekt na znanje o zdravlju i na zdravstvena ponašanja (49), kao i više ugodnih interakcija s liječnicima (51). Trudnice koje se doživljavaju iskusnijima u traženju informacija na internetu i procjeni njihove točnosti, imaju jasniju sliku o pitanjima koja žele postaviti liječniku i uključeniije su u donošenje odluka u trudnoći (21).

## Samoeфикаsnost i zdravstveni lokus kontrole

Samoeфикаsnost se smatra temeljem ljudske motivacije za uključivanje u određena ponašanja, a odnosi se na vjerovanje pojedinca u uspješno izvršavanje akcija i dostizanje željenih ciljeva (52). Samoeфикаsnost vezana uz vlastite sposobnosti izrazito je važna tijekom trudnoće i nakon poroda. Žene koje su samoeфикаsnije uspješnije kontroliraju strah od poroda i fizički su aktivnije nakon poroda (53,54). Što se tiče samoeфикаsnosti u kontekstu sigurnosti trudnica u uspješno nalaženje i korištenje zdravstvenih informacija s interneta, one koje su samoeфикаsnije i samopouzdanije po tom pitanju, češće se uključuju u pretraživanje (46,55). Trudnice koje imaju nižu zdravstvenu pismenost također imaju i sniženu samoeфикаsnost i više barijera oko brige za sebe u trudnoći i oko korištenja interneta za informiranje (49).

Zdravstveni lokus kontrole je vjerovanje pojedinca da on sam svojim postupcima utječe na svoje zdravstveno stanje ili vjerovanje da netko drugi, poput stručnjaka, ima najveći utjecaj na osobno zdravlje. Neke osobe vjeruju i da neko božansko biće, sudbina ili viša sila dovode do poboljšanja ili pogoršanja zdravstvenog stanja. S obzirom na navedeno, osobe mogu

informaciju o trudnoći uspješnije tražiti i razmjenjivati informacije s ljudima u okolini, posebno s stručnjacima (50), tako da je važno da trudnice dijele informacije koje pronalaze s osobama u okolini, posebno s stručnjacima. Razina zdravstvene pismenosti kod žena ima efekt na znanje o zdravlju i na zdravstvena ponašanja (49), kao i više ugodnih interakcija s liječnicima (51). Trudnice koje se doživljavaju iskusnijima u traženju informacija na internetu i procjeni njihove točnosti, imaju jasniju sliku o pitanjima koja žele postaviti liječniku i uključeniije su u donošenje odluka u trudnoći (21).

## Self-efficacy and health-related locus of control

Self-efficacy is considered the basis for human motivations for engagement in certain behaviors, and refers to the individual's belief in their capacity to successfully execute behaviors and achieve their desired goals (52). Self-efficacy associated with a woman's own abilities is extremely important during pregnancy and after childbirth. Women with greater self-efficacy are more successful at controlling fear of delivery and are more physically active following childbirth (53,54). As for self-efficacy in the context of the confidence of women in successfully obtaining and employing health-related information from the Internet, those with greater self-efficacy and higher self-confidence in that area are consequently more likely to engage in online searches (46,55). Pregnant women with lower health literacy also have reduced self-efficacy and more barriers in caring for themselves during pregnancy and in using the Internet to obtain information (49).

The health-related locus of control is the individual's belief that they themselves influence the state of their health through their own actions or the belief that someone else, such as experts, has greater influence on their personal health. Some persons also believe that some divine being, fate, or a greater power leads to improvement or de-



vjerovati u interni lokus kontrole, u lokus kontrole od drugih ili vjerovati u lokus kontrole koji se temelji na slučajnosti. Shieh i sur. (46) nalaze da je interni lokus kontrole, odnosno vjerovanje trudnice da njezini postupci utječu na dobrobit i zdravlje djeteta, povezan s češćim uključivanjem u pretraživanje informacija o trudnoći na internetu. One su također sklonije odgovornim i zdravim zdravstvenim ponašanjima i zdravom životnom stilu (56). Žene koje imaju nižu zdravstvenu pismenost češće imaju eksterni lokus kontrole i smatraju da je stručnjak najviše odgovoran za zdravlje u trudnoći (46). Također, nađena je povezanost lokusa kontrole i samoeфикаsnosti. Trudnice koje imaju interni lokus kontrole su također samoeфикаsnije po pitanju traženja zdravstvenih informacija (46).

## Anksioznost

Briga o vlastitom zdravlju i zdravlju djeteta adaptivna je jer će trudnica koja brine nastojati provjeriti je li sve u redu s trudnoćom i prakticirati će zdrav životni stil. Međutim, izrazita anksioznost u trudnoći je štetna za majku i dijete (57). Visoka anksioznost tijekom trudnoće ima brojne negativne posljedice na fizičko i psihičko zdravlje majke, preuranjen porod, dugotrajniji porod, češći carski rez, roditeljsku samoeфикаsnost, motoričko funkcioniranje i zdravstveno stanje djeteta te kognitivno i emocionalno funkcioniranje djeteta (58-63). Na hrvatskom uzorku nađeno je da je 35 % žena visoko anksiozno tijekom trudnoće, no razina anksioznosti pada nakon poroda (63). Žene koje su trudne prvi put mogu biti anksioznije od višerotkinja zbog toga što trudnoća za njih uključuje nova i nepoznata iskustva i tjelesne promjene. Važno je naglasiti da za anksioznije trudnice traženje informacija na internetu može biti način nošenja s njihovim strahovima (46).

Traženje informacija o zdravlju na internetu dovodi do povišene *zdravstvene anksioznosti*

of personal health. Given the above, a person can believe in an internal locus of control, in an external locus of control in a different person, or a locus of control based on accident. Shieh et al. (46) found that an internal locus of control, i.e. the belief of the pregnant women that her actions influence the health and wellbeing of the child, is associated with more frequent engagement in searching for pregnancy-related information on the Internet. Such women are also more likely to engage in responsible and healthy behaviors and have a healthy lifestyle (56). Women with lower health literacy are more likely to have an external locus of control and believe that the expert is most responsible for their health in pregnancy (46). Furthermore, an association has been found between locus of control and self-efficacy. Pregnant women with an internal locus of control also have higher self-efficacy regarding searching for health-related information (46).

## Anxiety

Caring for one's own health and the health of the child is adaptive, because a pregnant woman that cares will try to check whether everything is alright with the pregnancy and practice a healthy lifestyle. However, severe anxiety in pregnancy is unhealthy for both the mother and the child (57). High levels of anxiety during pregnancy have numerous negative consequences for the physical and psychological health of the mother as well as for preterm birth, longer labor, higher prevalence of C-sections, parental self-efficacy, motoric functioning and health of the child, and cognitive and emotional functioning in the child (58-63). A study on a Croatian sample found that 35% of pregnant women were highly anxious during pregnancy, but the level of anxiety was reduced after childbirth (63). Women who were pregnant for the first time can be anxious than multigravidae because pregnancy includes new and unknown experiences and bodily changes. It is important to emphasize that, for the more anxious pregnant women, searching for information online can be a way to cope with their fears (46).

i zabrinutosti kod dijela ljudi. Osobe koje su zdravstveno anksiozne su izrazito zabrinute oko svog zdravlja, iako ne boluju od neke bolesti. One učestalo brinu o fizičkim senzacijama koje osjećaju, a koje su sklone interpretirati kao opasne simptome (4). Zdravstveno anksiozne osobe sklonije su češće i duže tražiti informacije o zdravlju na internetu, a posebno su sklone uključivanju u rasprave na internet forumima (64). Istraživanja pokazuju da zdravstveno anksiozne osobe doživljavaju više negativnih efekata pretraživanja na internetu i češće posjećuju liječnike (65,66). Kowalyk i sur. (4) nalaze da je zdravstvena anksioznost povišena kod trudnica koje imaju neke komplikacije u trudnoći. Trudnice koje su svjesne da su pronašle dovoljno informacija o temi koja ih je zanimala, kao i one koje ne ponavljaju pretraživanje o istoj temi, imaju nižu zdravstvenu anksioznost (67).

Istraživanja anksioznosti u trudnoći pokazala su da postoji specifična anksioznost koja je karakteristična za trudnice. Radi se o *anksioznosti specifičnoj za trudnoću* (engl. *pregnancy-specific anxiety*) koja se opisuje kao neugodno emocionalno stanje koje karakterizira briga oko zdravlja djeteta, vlastitog zdravlja, poroda, briga oko financija i bliskih odnosa i zabrinutost oko izgleda (68). Anksioznosti u trudnoći sklonije su mlađe žene koje nisu udane, imaju niže obrazovanje i prihode, prvoročkinje su, nisu željele trudnoću i imaju povišenu anksioznost kao crtu i kao stanje (69). Također, anksioznost u trudnoći može se javiti kod žena koje su inače anksioznije u životu, ali i kod onih koje ranije nisu imale povišenu anksioznost (57). Neke žene koje imaju povišenu anksioznost u trudnoći izbjegavaju sve situacije koje bi mogle dovesti do još izraženije anksioznosti, pa tako i traženje informacija na internetu ili nastavak traženja informacija nakon što su ih one koje su pročitale uznemirile. Druge pak prestano traže nove informacije, često idu na testiranja i preglede i teško presta-

In some people, searching for health-related information on the Internet leads to increased health anxiety and concern. Persons with health anxiety are very concerned about their health even though they are not suffering from any disease. They frequently worry about the physical sensations in their body, which they are prone to interpreting as dangerous symptoms (4). Persons with health anxiety are prone to more frequent and longer online searches for health-related information, and they are especially likely to join in discussions on Internet forums (64). Studies have shown that persons with health anxiety experience more negative effects of online searches and visit physicians more often (65,66). Kowalyk et al. (4) found that health anxiety was elevated in pregnant woman who had complications in pregnancy. Pregnant women who are aware that they have found a sufficient amount of information on their topic of interest, as well as those who do not repeat searches on the same topic, have a lower level of health anxiety (67).

Studies on anxiety in pregnancy have shown that there is a specific type of anxiety that is characteristic for pregnant women. This is called pregnancy-specific anxiety, which is described as an uncomfortable emotional state characterized by worrying about the health of the child, one's own health, delivery, and about finances, close relationships, and one's appearance (68). Anxiety in pregnancy is more common in younger, unmarried women who have lower education and income, those who are primiparae, who did not want the pregnancy, or have increased anxiety as a personality trait and psychological state (69). Additionally, anxiety in pregnancy can manifest in women who are more anxious overall, but also in those who did not have elevated anxiety previously (57). Some women with elevated anxiety in pregnancy avoid any situations that could lead to more pronounced anxiety, which includes searching for information on the Internet or continuing to search for information after they have become upset by the information they have found. In contrast, other women constantly search for new information, attend testing and examina-

ju s traženjem informacija na internetu (67). Tim trudnicama nakon pretraživanja interneta anksioznost u trudnoći može biti još viša nego što je bila prije pretraživanja, posebno jer su osobe koje su anksiozne oko zdravstvenih stanja sklonije tražiti negativne informacije koje ih mogu dodatno uplašiti, a ne umiriti (70). Trudnice koje imaju povišeniju anksioznost specifičnu za trudnoću sklonije su rizičnim ponašanjima u trudnoći, poput konzumacije alkohola i cigareta (69,71). Također, ova anksioznost bolje predviđa negativne ishode trudnoće nego ostali konstrukti anksioznosti (68,71).

## EFEKTI KORIŠTENJA INTERNETA NA TRUDNICE

Pokazuje se da informacije nađene na internetu utječu na svakodnevno funkcioniranje trudnica i njihovo donošenje odluka, primjerice oko odabira načina poroda (5,72). Na temelju informacija o zdravlju koje trudnice nalaze na internetu, one propituju dijagnozu koju im je liječnik dao, procjenjuju preporuke stručnjaka i razmatraju i evaluiraju tretman kroz koji su prošle ili će tek prolaziti. Istraživanja pokazuju da je dio trudnica nakon pretraživanja interneta skloniji modificirati svoja zdravstvena ponašanja i navike (2,73). U istraživanju Lagan i sur. (21) većina trudnica je smatrala informaciju koju su pronašle na internetu korisnom. Dobivanje točnih i pouzdanih informacija tijekom trudnoće povezano je s manje komplikacija (74), rjeđim carskim rezom (75) i manjom smrtnosti majke i djeteta (76).

Korištenje interneta u trudnoći ima brojne pozitivne efekte. Žene nakon pretraživanja mogu osjetiti osnaženost, osjećaj kontrole i sigurnost u donošenje nekih odluka (20). Mnoge se osjećaju puno informiranije, spremnije za razgovor sa stručnjakom na pregledu i aktivno uključeno u njegu koja im je pružena (20,67). Žene koje su informiranije češće se upuštaju u

tions often, and find it hard to stop searching for information on pregnancy online (67). In these pregnant women, anxiety can be higher after online searches than before them, especially since persons anxious about the state of their health are prone to looking for negative information that can scare them instead of information that can calm them down (70). Pregnant women with pregnancy-specific anxiety are more prone to risky behavior in pregnancy such as consumption of alcohol and cigarettes (69,71). Furthermore, the presence of pregnancy-specific anxiety is a better predictor of negative pregnancy outcomes than other anxiety constructs (68,71).

## THE EFFECTS OF INTERNET USE ON PREGNANT WOMEN

It has been shown that information obtained on the Internet influences the everyday functioning of pregnant women and the decisions they make, for example regarding the method of delivery (5,72). Based on health-related information pregnant women find on the Internet, they examine the diagnosis established by the physician, assess expert recommendations, and evaluate the treatment they have undergone or are about to go through. Studies show that some pregnant women are more willing to change their health behaviors and habits after an internet search (2,73). In a study by Lagan et al. (21), most pregnant women considered information they found online to be useful. Obtaining accurate and reliable information during pregnancy is associated with reduced complications (74), lower incidence of C-section (75), and lower mortality in the mother and child (76).

Using the Internet in pregnancy has numerous beneficial effects. Conducting an online search can result in a feeling of empowerment, being in control, and feeling secure in making some decisions (20). Many women feel much more informed, more prepared to talk with physicians during their examinations, and more actively involved in the care they are receiving (20,67). Women who are better informed more frequently engage in activities that are beneficial to them and the child, thus promot-

aktivnosti koje su dobre za njih i dijete te tako promoviraju važnost informiranosti o zdravlju (46). Neke trudnice se nakon razgovora s drugim trudnicama na internetu osjećaju smirenije, zadovoljnije, samopouzdanije i manje usamljeno (1,9,25). Doživljavanje podrške drugih osoba koje su također trudne ili su rodile povezano je s uspješnijom prilagodbom i boljom pripremljenosti na izazove nakon poroda (77). Još jedna pozitivna strana pretraživanja informacija na internetu je međusobno dijeljenje informacija koje trudnica i njezin partner pronađu na internetu, što dovodi do njihovog zbližavanja i dodatnog povezivanja u trudnoći (19).

S druge strane, neke trudnice nemaju uvijek pozitivno iskustvo s korištenjem interneta. Lagan i sur. (20) navode kako se neke trudnice nakon pretraživanja osjećaju anksiozno i pod stresom zbog informacija koje su pronašle, a prije pretraživanja nisu nužno bile tjeskobne. U tom istraživanju žene su spomenule kako tijekom pretraživanja o komplikacijama u trudnoći često nalaze na zastrašujuće priče drugih trudnica koje ih jako uznemire. Svakako je važno uzeti u obzir da je vjerojatnost nailaženja na zastrašujuće priče drugih trudnica veća na internetu, nego od neke osobe iz okoline (1). Kad su trudnice bile preplavljene i opterećene velikim brojem informacija na internetu, a za neke su sumnjale i u njihovu pouzdanost, osjetile su anksioznost, preplašenost, a neke čak i paranoju (20). Neke trudnice su informacije koje pronađu na internetu učinile toliko uznemirenima da su posljedično potražile pomoć stručnjaka (1) ili bliske osobe (9,10). Žene koje svakodnevno čitaju informacije o zdravlju na internetu su zbog zabrinutosti uzrokovane informacijama češće kontaktirale liječnika, u odnosu na žene koje čitaju informacije jednom tjedno (9). Trudnice uglavnom izbjegavaju informacije koje ih mogu jako uznemiriti ili pojačati anksioznost, poput video snimki poroda (30). Osim uznemirenosti,

ing the importance of being informed about health (46). Some pregnant women feel calmer, more content, more self-confident, and less lonely after a conversation with other pregnant women on the Internet (1,9,25). Experiencing support from other people who are or have been pregnant is associated with more successful adjustment and better preparedness to challenges arising after childbirth (77). Another positive side of searching for information online is sharing information found on the Internet between the pregnant woman and her partner, which leads to their relationship becoming closer during the pregnancy (19).

On the other hand, some pregnant women do not always have a positive experience with Internet use. Lagan et al. (20) reported that some pregnant women feel anxious and under stress because of the information they found in an online search, whereas they were not necessarily anxious before the search. In that study, women mentioned that during online searches on complications in pregnancy they often encounter terrifying stories from other pregnant women that upset them greatly. It is certainly important to consider that the probability of encountering terrifying stories from other pregnant women is higher on the Internet compared with persons in one's environment (1). When pregnant women were overwhelmed and overburdened by a large amount of information on the Internet, the reliability of some of which was in doubt, they felt anxiety, fear, and sometimes even paranoia (20). Some pregnant women were so upset by information they found on the Internet that they consequently requested assistance from experts (1) or people close to them (9,10). Women who read health-related information on the Internet on a daily basis were more likely to contact their physician due to anxiety caused by the information in comparison with women who read information online once per week (9). Pregnant women mostly avoid information what can severely upset them or exacerbate their anxiety, such as videos of childbirth (30). In addition to being upset, some pregnant women felt confused by the information they obtained on the Internet (22), while some felt frustrated by being unable to find what they were looking for (25).

dio trudnica je osjetio zbunjenost informacijama na koje su naišle na internetu (22), a neke frustriranost jer nisu pronašle ono što su tražile (25).

Kad trudnice pronađu informacije na internetu koje ih smiruju, zanimljivo je da te informacije dovode do smanjene zabrinutosti kraćeg trajanja u odnosu na efekte informacija koje dobiju uživo. Ipak, informacije koje im na internetu pruže stručnjaci također imaju dugotrajniji efekt (1) što ukazuje na važnost izvora informacija kad su trudnice tjeskobne, a ne toliko medija kojim se informacija prenosi.

## ZAKLJUČAK

Široka dostupnost interneta omogućila je trudnicama da se aktivno i učestalo informiraju o zdravlju putem interneta. Trudnice koje su motivirane za traženje informacija i imaju istraživački stav, uključeniije su u praćenje trudnoće i više sudjeluju u donošenju odluka (14). S obzirom na velik broj informacija koje se mogu pronaći na internetu za trudnice je nužno da znaju procijeniti koliko su informacije pouzdane, ali i imaju kapacitet za nošenje s velikom količinom informacija koje su dostupne. Iako internet za neke trudnice simbolizira pozitivno okruženje gdje mogu dobiti podršku i razuvjeravanje, trudnice moraju biti pažljive zbog uznemirujućih sadržaja koji se nalaze u internetskom prostoru.

U usmjeravanju ponašanja trudnica na internetu veliku ulogu imaju njihovi liječnici, za koje je poželjno da samoinicijativno pokreću raspravu o informacijama na internetu tijekom pregleda. Ginekolozi bi trebali biti upoznati s kvalitetnim internet stranicama i mobilnim aplikacijama koje bi mogli preporučiti trudnicama. Bilo bi poželjno da liječnici provjere koliko su trudnice svjesne kriterija za procjenu kvalitete i pouzdanosti informacija na internetu te im, ako nisu, obrate pozornost na najvažnije kriterije.

When pregnant women find information on the Internet that calms them down, it is interesting to note that the calming effect is shorter in comparison with the effect of information received in face-to-face conversations. However, information on the Internet provided to them by experts also has a longer effect (1), which indicates that the source of the information is more important than the medium when the pregnant women are feeling anxious.

## CONCLUSION

The wide availability of the Internet has allowed pregnant women to actively and frequently obtain information via the Internet. Pregnant women who are motivated to find information and have a research-focused attitude are more involved in monitoring their pregnancy and in participating in decision-making (14). Given the large amount of information that can be found on the Internet, pregnant women have to be able to assess the reliability of the information, but must also have the capacity to cope with the large amounts of available information. Although for some pregnant women the Internet symbolizes a positive environment where they can receive support and understanding, pregnant women must be careful due to the upsetting contents that can be found in online spaces.

The behavior of pregnant women on the Internet is significantly influenced by their physicians, for whom it would be desirable to take the initiative in starting a discussion on information found on the Internet during examinations. Gynecologists should be familiar with high-quality Internet pages and smartphone applications that they can recommend to pregnant women. It would be desirable for physicians to check how aware their pregnant patients are of the criteria used to assess the quality and reliability of information on the Internet and, if they are not sufficiently aware, indicate the most important criteria. Additionally, given their expertise, it would be ideal for physicians to actively engage in creating Internet content for pregnant women. International research shows that only a small number of healthcare profes-

Također, s obzirom na njihovu ekspertizu, bilo bi idealno kad bi se liječnici aktivno angažirali oko kreiranja internet sadržaja za trudnice. Inozemna istraživanja pokazuju da malen broj zdravstvenih djelatnika u sklopu obrazovanja uči o važnosti pretraživanja interneta za pacijente, kao i da nisu upoznati s kriterijama pouzdanosti internet stranica (78), što je svakako pokazatelj da treba poraditi na poboljšanju i modernizaciji obrazovnih programa.

Traženje informacija o zdravlju na internetu nije zamjena za podršku koju trudnice dobivaju u stvarnom životu, *offline* (1). Suradnički odnos s liječnikom i puno podrške, topline i pažnje od okoline trudnici je izrazito potrebno u ovom važnom životnom razdoblju. Međutim, korištenje interneta je za većinu trudnica svakodnevnica i samim time je nužno detaljnije istraživati ponašanja trudnica na internetu i efekte koje internet ima na njihovo zdravlje i dobrobit. Iako je nađeno nekoliko psiholoških karakteristika trudnica i karakteristika izvora i sadržaja na internetu koji su povezani s učestalijim pretraživanjem interneta, jasnija slika mehanizama koji pridonose zadovoljstvu ili anksioznosti nakon pretraživanja interneta kod trudnica još je nerazjašnjena. Ovo područje zaslužuje veliku istraživačku pažnju s obzirom na brojne potencijalne praktične implikacije nalaza u okviru obrazovnog sustava i naglašavanja važnosti zdravstvene pismenosti, ali i u kontekstu zdravlja trudnice i djeteta i napretka sustava zdravstvene skrbi.

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sionals learns about the importance of internet searches for their patients during the course of their education and that they are unaware of the reliability criteria for webpages (78), which is certainly an indication that more effort is needed to improve and modernize educational programs.

Searching for health-related information on the internet is not a replacement for the support pregnant women receive in real life, offline (1). A cooperative relationship with the physicians and a large amount of support, warmth, and care directed at the pregnant women from the people around her are extremely important in this important period in life. However, using the Internet is part of everyday life for most pregnant women, and further research is therefore necessary regarding the behavior of pregnant women on the Internet and the effects that the Internet has on their health and welfare. Although some psychological characteristics in pregnant women and characteristics of sources and contents on the Internet have been found to be associated with more frequent Internet use, a clearer picture of the mechanisms that contribute to contentment or anxiety in pregnant women after online searches is yet to be elucidated. The topic deserves a large amount of attention from researchers given the numerous potential practical implications of study findings within the framework of the educational system and emphasizing the importance of health literacy, but also in the context of the health of pregnant women and their children as well as improvement of the healthcare system as a whole.

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