

Olatunbosun Kolawole

**PSYCHOLOGICAL IMPACT OF ONLINE SUPPORT
COMMUNITIES: CAN HUMAN PARTICIPATION IN
AN ONLINE HEALTH COMMUNITY IMPROVE PSY-
CHOLOGICAL WELL-BEING**



UNIVERSITY OF JYVÄSKYLÄ
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ABSTRACT

Kolawole, Olatunbosun

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Supervisor(s): Dr. Zhang, Yixin and Dr. Rönkkö, Mikko

Online Health Communities (OHCs) have become a major source of social, emotional and informational support for people with health problems. There has been much debate surrounding the potential benefits and costs of online interaction. This debate is centred on the positive and negative effects online health communities have on its users. Social network is believed to have great impact on its participants as suggested by some works of literature, thus participants feel a sense of liberation from any perceived restriction placed in real world either legally, socially or politically. Online Health communities have been able to provide support to these individuals therefore, leading to a positive impact to the individual's psychological well-being. On the other hand, other line of literature on virtual communities suggest that online social platform can have a negative effect on the participants' psychological well-being.

Therefore, this study focuses on the psychological impact of online health communities. The constructs formulated in this study was based on several construct formulated on studies related to online health communities and psychological well-being. The construct utilized to fit the current study includes, social support, social identification, online users behaviour and the psychological flourishing scale. Internet use, education, income level, age and gender were included as control variables.

This study result showed that online behaviour, social identification and social support positively impact the psychological well-being of users' after joining the online health community. While social identification played a positive predominant role in its impact, online behaviour and social support had a considerable positive impact on psychological well-being. Out of five control variables, only age influenced psychological well-being after joining the online community. Overall, the measurement model explained 81% of variance in the impact of online health communities on psychological well-being.

Keywords: online health communities, psychological well-being (PSY), online behaviour (OB), social support (SS) and social identification (SI).

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1 ONLINE HEALTH COMMUNITIES

Since the invention of the internet, the idea of an online community has always been the centre of it. Scientist used the internet for many years to share information, exchange information and to work jointly on research. Basically, the interactive research communities that exist on the internet platform was formed by scientist. Within the last few years, millions of internet users have joined online communities that harness social media technologies, such as YouTube, Wikipedia, Google, Instagram, LinkedIn, Facebook, and Twitter. Social media have made it possible for individuals faced with limited cost, time and geographical difference to co-create and communicate (Shirky, 2008). Logically, it seems reasonable to apply these revolutionary elements to health care. As such, social media technology also provides a medical platforms that enables the increase in medical knowledge and conveying information about health and diseases (Powell et al., 2003; Nambisan et al., 2011).

According to Wright's definition (2000), an online health community is a set of small online discussion groups where people with the same interest in topics related to health and well-being share information, thoughts, experiences, and offer support to members of the online health community. The main core of an online health community is the informational support members provide one another based on first-hand experience of a medical problem. This feature of online health communities have improved medical knowledge and have been a great source of information on health education (Borkman, 1976). Online health community consist of two groups, open and closed communities. In an online health open community, its contents can be accessible by members and non-members. Only registered members can contribute to contents posted in the discussion forum of their community and the generated information is openly accessible to the members and non-members of the community. In an online health closed community, access to contribute to the community contents and the information is restricted and monitored by the community manager. Only members are allowed to view and contribute to contents after a community leader, which is, the community manager, has granted them access (Mijn Zorgnet, 2013).

According to Swan (2009), patients in an open or closed online health community become active in their own health care and connect with health professionals. In the last few years, there has been an increase in the number of online medical websites, "Over 70 000 website disseminate health information; in excess of 50 million people seek health information online" (Cline, 2001, p. 671). This rise in number is because of more patients are looking for alternative means to find health information and to connect with other patients with similar health conditions (Davison, et al., 2000). In addition, there is a fast increase in medical knowledge and unfortunately, healthcare professionals have insufficient expertise in dealing with a patient with complex health care need (Martijn van der Eijk et al., 2013). Online health community websites such as PubMed, WebMD, and Health Unlocked provides patients with complex health need informational support by offering an interactive community where members discuss several health topics and issues. The interactive feature of online health communities provides its' users with emotional, instrumental, informational and appraisal support (White & Dorman, 2001). Robinson, et al., defines 'interactive health communication' as 'the interaction of an individual -consumer, patient, caregiver or professional -with or through an electronic device or communication technology to access or transmit health information or to receive guidance and support on health-related issue' (Robinson, et al., 1998, p. 1264).

According to existing literature, Online Health Communities brings together and unite groups of patients and professionals with similar interest regardless of their geographical location. Such a group may consist of patients with certain medical conditions such as mental illness, cancer and diabetes, or group of professionals with similar medical interest such as health and aged care professionals as well as pharmaceutical and medical professionals (Martijn van der Eijk, et al., 2013). These online health communities are supported by various types of modern communication technologies such as wikis, blogs, chat rooms, forums and email list. The increase in the number of online health communities is as a result of the growing interest of people in the services provided by these online community websites. An example of such online health communities is Health Unlocked, a social networking site for health services. This site enables peer support and provides important health contents and information to patients. Numerous studies have shown that a correlation exists between online health communities and its members (Louise & Jessica, 2015; Haferkamp & Krämer, 2011; Batenburg & Das, 2015). However, an extensive research that will measure directly psychological correlation that exist between online health communities and its' members is yet to be done (Batenburg & Das, 2015). Some studies on the benefits of online health communities reveal that these communities empower patients who are lonely, helps to improve the quality of the decision they make, the life they live and improves their knowledge on health education.

In their 2012 study on the Dialogue-based Web application enhances personalized access to healthcare professionals--an intervention study, Bjoernes, et al. revealed that one of the possible ways for our communication to expand,

when compared to the face to face hospital consultation, is through our internet based contacts. Therefore, the approach of many online health communities tailored towards the emotional and medical needs of its users are considered by some researchers as a holistic approach. This approach is hard to get through the face-to-face medical consultation (Lisa, et al., 2006). Several literatures on social network suggest that some of the reasons why individuals participate in an online community is because they feel liberated from any social, political or legal restrictions (Rodgers & Chen, 2005; Uden-Kraan, et al. 2008; Walther & Boyd, 2002). However, despite the pros highlighted above, other works of literature on virtual community suggest that online social platform can have a negative impact on the psychological well-being of its users (Louise & Jessica, 2015; Barak, Boniel-Nissim, & Suler, 2008).

In their 2011 study on Social Comparison 2.0: Examining the Effects of Online Profiles on Social-Networking Sites, Haferkamp and Krämer revealed that users of social networking sites like Facebook are prone to experience a decrease in life satisfaction, negative self-regard, negative mood and depression when they compare their online social status with others. Similarly, in their 2018 study on the Negative Effects of Online Health Communities on User's Health: The Case of Online Health Forums, Tareq et al., claims that users in an online health forum are prone to experience a decline in their health when they receive wrong medical information from another community user.

Therefore, the aim of the current study is to directly measure and identify the correlation that exist between online health communities and its users. Furthermore, the current study intends to propose online communities as an aid to ameliorate symptoms that deteriorate psychological well-being. That is, if the result of the study reports an existing positive correlative psychological effect on users' well-being. The present study utilizes four constructs to measure the impact of online health community on users' psychological well-being. These construct are online behaviour, social identification, social support and the psychological flourishing scale. Online behaviour construct is derived from the measurement model used in a study on the Virtual Support Communities and Psychological Well-Being: The Role of Optimistic and Pessimistic Social Comparison Strategies (Batenburg & Das, 2015).

Social identification was adopted from SISI: a measure of the positive emotional valuation of the relationship between self and in group (Postmes, Haslam, & Jans, 2012). SISI was developed as an additional recommendation for measuring social identification. Social support construct is derived from a social support survey developed for patients in the Medical Outcome Study (MOS), a two-year study of patients with chronic conditions (Sherbourne & Stewart, 1991). Psychological well-being scale was adopted from the Psychological Flourishing Scale (PFS). According to Diener & Robert (2009), PFS scale measures not only life satisfaction but also other aspects of psychological wealth such as social relationship, competence, self-respect, engaging in work and whether individuals' life is purposeful and meaningful. Psychological Flourishing is also known as "Psychological Well-Being," or "Eudaimonic Well-

Being.” It measures not only the individual’s pursuit of their own happiness but also the support individual’s give to the society for the happiness of others.

The present study utilized a quantitative research approach, with the application of Statistical Package for Social Sciences (SPSS) to perform statistical analyses. Data collection procedure resulted in 126 valid responses, collected digitally. Results of the study revealed that social identification has a strong positive impact on online health community users’ psychological, while other constructs, such as, social support and online behavior had considerable positive impact on users’ psychological well-being after joining the online health community. Overall, the measurement model explained 81% of the psychological impact on human participation in an online health community.

1.1 Research Question

Numerous studies have questioned the impacts, for example, the potential benefits and costs surrounding online interaction. This discussion is centred around the positive and negative effects online health communities have on its users' psychological well-being. While some works of literature on social networks suggest that some of the reasons why individuals participate in an online health community are because they receive social support, emotional support and feel liberated from any social, political or legal restrictions. Other works of literature on online health communities suggest that online social platform can have a negative effect on its users’ psychological well-being. For example, it is difficult for some members in an online community to deal with sad and negative stories about the illness of other online community members and in some situations deactivate or stop visiting the online community (Louise & Jessica, 2015). In addition, in another study on social networks, Moreland & Fox (2015) highlighted the psychological effects of social comparisons on social media platforms. The authors suggest that some users of Facebook experience negative emotions such as anxiety and jealousy as a result of constantly comparing themselves with other Facebook users. Although, one cannot compare Facebook to online health communities’ because they are not exactly the same thing.

Social comparison related to illness, Morris & Campbell (2011), their study was conducted on females with breast cancer taking part in an online health support group. The authors' study proved that when these women compared their health situation with others, they became hopeful when they learnt about others in the group doing better. On the other hand, another research conducted in a similar online setting proved that such comparison with other people doing much better was negatively associated with depression (Legg, Occhipinti, Ferguson, Dunn, & Chambers, 2010). There have been several studies on the psychological effects of online health communities, some of these studies are focused on cancer support groups, diabetes support group, and HIV & AIDs support group.

The current study focuses on the mental health support group, such as, depression, anxiety, obsessive compulsiveness and post-traumatic stress. Based on a study conducted by the World Health Organization and data produced by the Global Burden of disease, one of the prominent cause of disability world-wide is caused by mental illness. Thus, the objective of this study will aim at answering the following research question:

RQ: Can human participation in an online mental health community improve psychological well-being?

1.2 Thesis Structure

This study consists of seven chapters and below shows the structuring of each chapter. The introductory chapter describes the background and aim of the study, identifying the importance of online health communities and issues experienced by members involved.

The second chapter will review previous literature on online health communities' and psychological well-being. It begins with the general description of mental health online communities' then it will follow with a discussion on the psychological effects of online communities on its users. The chapter ends with a comparison between online health communities and the traditional patient - clinician relationship.

The following chapter describes the theoretical foundation of psychological well-being, social support and social identification, and its effect on humans' mental well-being. Next, the fourth chapter describes the research methodology, measurement scale items and their sources are presented. This chapter will also discuss the increasingly used construct for evaluating and measuring psychological well-being, which will support in developing the construct for this study. Furthermore, the measurement items adopted from previous studies used to measure online behaviour, which was modified and utilized to fit the current study, will be discussed.

The findings of the conducted research are described in the fifth chapter. First, descriptive statistics of the empirical data are presented. This is followed by the procedure for statistical analyses. The sixth chapter presents an analysis of the key findings and interpretation of the research results along with the limitations and directions for future research.

The final chapter concludes this thesis, it includes summarizing the aim of the study, research methods, applied data collection and contribution of online health communities to the psychological well-being.

2 ONLINE HEALTH COMMUNITIES AND PSYCHOLOGICAL WELL-BEING

Online communities exist for various purposes and on several different topics. This study focuses on online mental health communities. Mental illness affects our society, 25% of the adult population, 45% of teenagers and 13% of children each year are diagnosed with mental illness. However, only few of those affected receive treatment, in most cases, this is due to the stigma attached to mental illness (Holthaus, 2019).

Recently, people suffering from mental illness have turned to online health communities for informational, emotional and social support. This is because of the recent studies on virtual health communities and its effect on psychological wellbeing. For example, a study on people suffering from diabetes, AIDS and cancer revealed that these individuals were motivated to join online health groups because of the informational and emotional support they receive, in addition, they found others with similar health conditions online (Davidson et. al., 2000). For example, numerous studies have shown that individuals dealing with cancer, AIDs and diabetes are motivated to look for informational and emotional support from people who experience similar health conditions, both in the online and offline world (Davison et. al., 2000). According to Walther & Boyd (2002), most of these online health communities are set up and organized by ex-patients. In their 2005 study on the Self-help online: An outcome evaluation of breast cancer bulletin boards, Lieberman & Goldstein. Their study revealed that over time, a group of patients with similar health diagnosis experience an increase in their psychological well-being by actively participating in online health communities that offers online support. In addition, Ma, et al. (2017) study also revealed that expressive writing in an online health community improves the mental and physical health of patients dealing with a difficult diagnosis. In the following section, the general description of online health communities will be discussed, including psychological effects as compared to the patient clinical health services.

2.1 General Description

Many people with mental illnesses tend to isolate themselves from the real world. They either they push others away (as in the case of depression), find difficulties in joining with others (as in the case of anxiety, or paranoia, or autism), or literally find themselves excluded by others (as in the case of thought disorders, psychosis and other odd social behaviours) (Micheal, 2015). Mental health online communities provide support for people coping with mental illness and stressful life problems, it allows patients to freely express their emotions and to interact and connect freely with other members or patients experiencing or diagnosed with same or similar ailment or conditions. It is an online system of care that provides patients in the online health community informational, emotional and social support as well as a sense of belonging to the social world, i.e. social identity (Bentley, 1994). In addition, these communities also offer informational support to caregivers, family members, and friends of patients diagnosed with mental illness, and it can also be used for medical research purposes such as “participant-led research,” in which “participants are the leading force in the initiation or conduct of research projects” (Vayena & Tasioulas, 2003, p. 1).

Online mental health communities utilize social media tools such as forums, chat, and blogs for communication, and they provide peer-to-peer support. These aids have made communication in an online health community accessible in different ways: Information can be accessed easily regardless of the patient geographical location and experience sharing is simple and fast. A discussion forum is a form of bulletin board style wherein users in an online health community can read messages, respond to other member’s post and post their own messages. Thus, this thesis explores the psychological impact of users’ engagement in mental-health-related topics in HealthUnlocked (Health social network). Currently, HealthUnlocked has over seven hundred different health communities on its website, for different health and well-being conditions. These communities empower patients by actively engaging them in their health care.

2.2 Psychological effects of Online Health Communities

This section will review previous studies on virtual health communities and psychological well-being. The objective of this review is to highlight the advantages and disadvantages of online mental health communities on the psychological well-being of its members or participants.

Depression is a serious threat or challenge facing individuals and the population at large, and it is a mental health illness that affects the psychological well-being of people suffering from it. Some of the symptoms people facing depression experience are insomnia, low mood, feelings of worthlessness, loss

of interest, self-harm, low energy, and poor concentration (Flint & Kendler, 2014). According to emotional contagion theory, one person's emotions or behaviours can trigger similar emotions in other people. Therefore, in an online mental health community, increased communication and prolonged participation within members suffering from depression can worsen the mental state of other members (Attard & Coulson, 2012). Emotional contagion theory describes emotional influence as the spread of a single person's emotion to others during interpersonal encounters. For instance, in an empirical analysis, members of an online mental health community began to harbour suicidal thoughts following reports of suicides posted in the community forum before the act was committed (Choudhury, Kiciman, Dredze, Coppersmith, & Kumar, 2016). Positive and negative emotional feeling gradually spreads throughout individuals, socially connected in an online health network (Hill & Dunbar). Because of this particular effect, some studies have suggested that interaction with other mentally ill or depressed members of the online community is a possible risk factor for depression (Bastiampillai, Allison, & Chan, 2013).

Furthermore, according to Moreland & Fox (2015), another major downside of online health communities is that members in the communities have a tendency to act as a practitioner despite not having any medical knowledge or training in any medical field. In their study, the authors questioned the quality of information shared in the online health community, its source and its effects on the medical condition of members in the online community. In worst case scenarios, health experts worry that the use of these contents might increase the severity of the current medical problem of patients, might lead to unnecessary delays in getting professional treatment and also the violation of other community members privacy by posting delicate and sensitive information online (Benigeri and Pluye, 2003). Despite the negative impact of these communities on psychological well-being, Aldao & Hoeksema (2011) pointed out that discussion forums in an online health community focused on mental health topics could also offer informational and emotional support to members in the community. Thus, this makes it possible for patients to change their perception of mental illness and ways to deal with traumatic scenarios (Thoits, 2011).

According to Davidson et al (2000), mental illness is perceived in our society as stigmatized ailments and people dealing with such medical condition can sometimes feel isolated or alienated from their environment or others living around them. Patients that experience such symptoms of mental illness seek assistance from others with similar health conditions in an online health community. According to the authors, this behaviour is known as patients' demonstration of affiliative behaviour. Affiliative behaviour facilitates human connections; it is when patients seek to form an emotional or social bond. This desire facilitates the need to bond with others having the same medical conditions and this action is considered by patients to be pleasing, appealing and is one of the reasons most patients join an online health community (Festinger, 1954).

Social media platforms that facilitate connection have the likely tendency to make one evaluate themselves with others, which may have a positive or

negative impact on psychological well-being. Numerous research on social networking sites has shown that social comparison exists in an online environment and that social comparison can be used as a coping technique to produce a psychological feeling of self-enhancement or self-improvement (Legg et. al., 2011). Although one cannot compare social network sites to online health communities, they are not exactly the same. For instance, some Facebook users experience negative feelings, such as anxiety and jealousy as a result of constantly comparing themselves with other Facebook users (Moreland and Fox, 2015). If we narrow our view of social comparison to related illness, research conducted on females with breast cancer taking part in an online health support group proved that these women became hopeful when they learnt about others in the group doing better (Morris & Campbell, 2011). On the other hand, another research conducted in a similar online setting proved that such comparison with other people doing much better was negatively associated with depression, anxiety and panic attacks.

Furthermore, Cohen & Wills (1985) in their study on the Supportive functions of relationships In Social Support and Health added that individuals in an online health community that become aware of others with a less fortunate situation are likely to experience an increase psychological well-being and also lower feelings of self-pity. In addition, there is a chance for improvement and development in individuals' personal situation when they become aware of others with a more fortunate case (Wood, Taylor, & Lichtman, 1985). Summing up all the pros and cons, based on the above, social comparisons plays an important role in an online health community because of its impact on psychological well-being. Online health communities might not necessarily eliminate the negative emotional feelings that deteriorates mental well-being or cure mental illness completely. However, it is important for patients to have an open mind when visiting an online health community and to weigh all the potential benefits and costs of these online communities with the traditional patient - clinician relationship.

2.3 Comparison with the traditional patient - clinician relationship

In the conventional face-to-face patient-clinician relationship, one of the means patients deal with their medical problem is to depend on health professional for solutions. During the traditional face-to-face interaction that occurs between patients and health care professionals, patients gain psychological and physical comfort from these meetings (Morgan & Yoder, 2012). In spite of these benefits derived from the interactions, this conventional approach has been criticized for being disease-centred or doctor-centred instead of being patient centred (Fan, Lederman, Smith, & Chang, 2014). That is, doctors tend to usually assume the role of a project manager at the cost of activities that are im-

portant for the well-being of the patient. For example, doctors pay less attention to patients' feelings, respond to it, and enabling patient self-management (Mc Cormack et al., 2011). However, some patients prefer to be active or involved in managing their own medical condition (Fan, Lederman, Smith, & Chang, 2014), and to engage themselves in looking for what can be referred to as "just-in-time someone-like-me" information (Moreland & Fox, 2015). Online health communities serve as an alternative source that provides information about medical conditions especially the first-hand experience of people managing such condition. Additionally, it also provides psychological support via other patients.

To some individual in an online community, the interactions with other community members can be more valuable than consultations with treating physicians. This is partly because the community empathizes with that person's needs by providing support based on the first-hand experience about how to deal with day-to-day problems at the time the advice is needed and there is no need to wait for the next consultation with a doctor (Moore and McMullan, 2009). Community interaction is an effective type of medical consultation that is a patient centred.

Online health communities are becoming of high-value but it also raises questions on the sources of information disseminated in these communities that could be a threat to the health of its users'. However, research so far tends to place focus on information government health departments, hospitals and research institute provide and have disregarded user-generated information (Fan, Lederman, Smith, & Chang, 2014). Additionally, Jin et al. (2013), their study specified that requirements such as credibility, completeness and accuracy should be present in evaluating user-generated content. User contents might be insufficient since the user-generated information is very subjective, discourse, and "quality signals becomes vague when diffused and cognitive overload occurs frequently" (Cao, Basoglu, Sheng, & Lowry, 2015, p. 736). According to Metzger & Flanagin (2013), to evaluate information and its author, a credible relationship of trust must exist between the author and the information provided. Because government health departments, hospitals and research institute are regarded as an objective, trustworthy and authoritative organization. The information they provide is considered to be complete, up to date, plausible and objective when compared to information provided by Online health communities (Hovland and Weiss, 1951). Thus, information that is reliable is perceived to likely originate from a source that is dependable and trustworthy. Nevertheless, it has been shown that most patients visit online communities to seek informational support because they feel they do not get adequate support from health departments. They usually feel alienated, isolated, misinformed and sometimes get anxious about treatment (Idas & Vetsianos, 2009).

Furthermore, patients often visit online health communities because they partially want to satisfy their informational needs in order to ameliorate anxiety as well as to reduce the stress they feel when they do not know anything

about a new medical condition they are faced with. An online health community is considered as an information hub, individuals rely on to minimize false or misleading information and are able to get in-depth information readily available about certain health topics (Hui, Crowcroft, & Yoneki, 2008). Particularly, when patients feel dissatisfied with the information provided by their health professionals (Rodgers & Chen, 2005), these patients and caregivers visit online health communities in order to get practical knowledge and a second opinion from other patients in the community. Sometimes the information they receive from healthcare professional is different from the information they receive in an online community (Rodgers & Chen, 2005; Moore and McMullan, 2009).

Regardless of the advantages, online health communities also face setbacks that must be acknowledged. Some of these drawbacks include difficulties in controlling and regulating the quality of information disseminated in these websites, leading to concern about the spread of information that is inaccurate. For example, The Food and Drug Administration encourages people to thoroughly assess information found online about health topics due to the possibility that this information might be inaccurate and might cause damage to health. Biased research results and incorrect health information, obviously, exist outside the internet world, however, the internet provides wide access to information with the potential to reach a large amount of audience (Park & Conway, 2017). Regardless, I am of the opinion that symptoms that worsen the psychological wellbeing can be enhanced through online health communities and traditional patient-clinician relationships.

I also suggest that doctors should be aware of the several reasons for which their patients use online health communities. Physicians should educate their patients about this information to facilitate shared decision making because patients' ability to receive informational and emotional support from online health communities and the traditional face to face patient-clinician relationship might have much better outcomes in mental health (Choudhury, Kiciman, Dredze, Coppersmith, & Kumar, 2016).

3 PSYCHOLOGICAL WELL-BEING, SOCIAL SUPPORT AND SOCIAL IDENTIFICATION

Understanding factors that explain the reason why patients use online health communities and the psychological effects have become one of the most researched topics in the field of information system and mental health. The purpose of this present chapter is to explore the theoretical foundation of psychological well-being, social support and social identification, and its effect on humans' mental well-being.

3.1 Social Support

The idea of social care or aid has been on the rise because it is believed that its accessibility may play a major role in boosting individual emotional wellbeing and personal health. According to previous research on social media, several studies have long established that one of the reasons people join a mutual aid group or online health communities is to seek support. Due to the self-support, anonymity and accessibility these online mutual aid groups provide, their number has increased dramatically over the past decade (Madara, 1997). Furthermore, these virtual mediated support groups provide most of the same benefits offered by the traditional face-to-face health groups, such as information sharing, emotional support, shared support, shared problem-solving, appreciation, sympathy and expressing feelings (Finn, 1999). In addition to these benefits, online health communities remove the time, location and distance barriers encountered in the traditional face-to-face support group, and allows contribution of knowledge, information and personal views to the group worldwide. Two-Way learning and the ability for individuals to find others suffering from the same conditions similar to theirs are also among some of the advantages associated with online health communities. Specifically, Perron (2002) outlined that the benefits associated with online health communities is

not limited to those with mental distress, but extends to families, close friends and caregivers of those who suffer from emotional or mental distress.

According to Malik & Coulson (2010), their study found that online support community allows members to express themselves right way after an emotional event, a therapeutic gain barely available in the face-to-face group. In addition, Malik & Coulson (2010) suggests that online support groups for women who once suffered from postpartum depression should serve as a means for mutual support, informational guidance, and empathy among women dealing with fertility issues. When emotional support is offered to individuals, it protects them from a stressful situation or negative consequences. While this may be true, to understand the effects of social support to our psychological health, social support must be broken down into its components and each component should be analysed in relation to how it affects psychological well-being (Sherbourne & Stewart, 1991).

According to Schaefer, Coyne, and Lazarus (1981), the components of social support are emotional support, esteem support, network support, informational and tangible support. Emotional support is the type of support that meets the individual's affective needs. This support is expressed by showing concern such as, telling someone, "You mean so much to me". This type of support is referred to as social support. Expressing emotional support does not solve a problem, but it elevates an individual's mood. The next type of support is the esteem support. This support is communicated to an individual in order to increase their self-esteem or make them belief in their ability to manage an issue or execute a job that is required. This support is aimed at promoting people to take necessary measures and to convince them that they can face certain issues. In contrast to the first two types of social support, network support is not based on emotions or self-concept, but rather refers to communication that reminds individuals of support available to them in their social network. There are many types of support offered in a network but the concept of a network support is to underline the availability of a network to provide social support.

Another component of social support is informational support. This type of support involves communicating useful and needed information. Information is often needed to make decisions when faced with a difficult or challenging situation. Finally, the fifth type of support is the tangible support. This is any physical aid provided by others. This can vary from preparing a meal for a sick person to driving that person to see a doctor. In some situations, this support is best offered by providing material goods or performing an action that helps an individual in a difficult situation.

After considering the various components of social support, this current study will focus on informational, emotional, network and esteem support.

3.2 Social Identification

Social identity is the feeling a person perceives about who they are in relation to the group they belong to. The current study suggests that the group members belong to in an online health community is a vital source in determining their self-esteem and pride. According to Tajfel (1970), the groups we find ourselves happy and comfortable with gives us a sense of belonging to the social world.

Tajfel (1970) formulated the theory of social identity, the author's concept instituted social identity as an intergroup behaviour, that the in-group will discriminate against the out-group to enhance their self-image. Furthermore, the author pointed out the three mental processes involved in analysing intergroup behaviours are: The first process is called Social Categorization Theory. This theory points out that to gain understanding and identification of objects we tend to categorize them. At the same time, we apply the same concept of categorization on ourselves and to people around us in order to gain a clear understanding of our social environment. In the second mental process, we embrace the group we have categorized ourselves into because there are emotional importance and bond we have formed with the group we have identified ourselves with - Social identification. The final process is social comparison.

According to social comparison theory, it states that people determine their own social worth based on the number of their social networks stacked up. Furthermore, the theory states that people will tend to compare and evaluate themselves and others around them or with people in their social network in order to foster a positive image about themselves and to increase their self-motivation. As a result, individuals will consistently evaluate themselves and others around. This evaluation cuts across varieties of domains in human life such as, in wealth, intelligence, success, beliefs, beauty and attractiveness. These evaluations might also lead to a biased judgment, inferiority or superiority complex and an overly competitive attitude. Some individuals have the ability to control and suppress the emotions experienced during the social comparison, nevertheless one's true inner feelings will eventually emancipate itself in other ways. According to some research, individuals who constantly compare and evaluate themselves to others around them are exposed to experience negative feelings such as depression, dissatisfaction in life, and sometimes might engage in harmful behaviours, like deception, disordered eating and suicide. People tend to compare themselves with other groups once they have categorized and identified themselves with a specific group, once this connection has been established, their perception and psychological well-being begins to change (Festinger, 1954). As discussed previously, based on the mental processes identified by Tajfel (1970), therefore, the following hypothesis is proposed:

H1: Social identification in an online health community positively affects psychological well-being.

3.3 Psychological Well-being

Psychological well-being describes the level of well-being individuals experience based on their subjective evaluations of their own lives. These evaluations include positive and negative individual experiences which are, feelings about life satisfaction, environmental awareness, self-acceptance, relationship with others as well as personal growth and development (Diener & Ryan, 2009). There are several measures to psychological well-being and one of the most utilized measures by scientist is the self-report measures (Sandvik, Diener, & Seidlitz, 2009) In psychology, a self-report usually involves a test or survey that relies on report provided by individuals' based on the assessment of their beliefs, attitudes, behaviour and symptoms. This report is gathered from an interview or questionnaires performed in an electronic format or with paper-and-pencil (Kristalyn Salters-Pedneault, 2011). When using self-report measures, studies suggest that factors such as social relationships, education, gender, work and income should be included in the measurement scale because in some cases, they influence response to items measuring psychological well-being (Pavot & Diener, 1993). The aim of the current study is to reveal how factors, such as, users' online behaviour, social support and social identification impacts users' psychological well-being, the next chapter will identify the tools used to measure users' psychological well-being.

3.4 Online user behaviour

The behaviour of users' online entails several online social activities such as publishing of contents, making friends and messaging. Recently, online social networks have witnessed rapid growth in the number of users' worldwide. A study on Facebook revealed that the social network site has over 1.01 billion people using the site each month. Online social networks have changed the way humans connect and get in touch with each other. Almost every day, an online social network is created but only a few of them stay up active for long or become popular worldwide. The long and short-term success of an online social network mostly depends on the type of behaviour the users' exhibits, in particular; the online activity of users' significantly affects the services provided by the online social network (Jin, Chen, Wang, Hui, & Vasilakos 2013).

However, little attention has been given to the behavior of users in social networks. In particular, when the social network value has to be evaluated, users' activity such as the time spent, contribution and participation in a forum are some of the important aspects looked into in an online social network. Based on this, understanding the behaviour of users' in an online health community is the driving motivation behind this study, to gain insights on the psychological effects of online health communities and users' online behaviour that causes those effects. Since the aim of the current study is to reveal how users'

online behaviour affects their psychological well-being, the next chapter will identify the tools used to measure users' behaviour online.

4 RESEARCH METHODOLOGY

The emergence of online health communities has been in existence for a while and different studies have been carried out on the numerous types of online health communities and its impacts on its users'. This study aims to identify the psychological impact or advantage benefited by members of an online health community. Thus, this thesis will focus on the information gathered from healthunlocked.com to assess the psychological impact of online health communities. The present chapter discusses applied research methodology. Next, developed measurement instrument is presented together with sources of the measurement items. Lastly, application SPSS technique for data analysis is explained.

4.1 Quantitative research approach

The study aims to answer the question "Can human participation in an online mental health community improve psychological well-being?" An empirical research has been conducted to verify the current study claim towards the end.

According to Punch (2003), the author suggests that an empirical research usually ought to include four primary stages. These stages are: (1) formulating the research questions, (2) An in-depth understanding of the type of data needed to answer the research question, (3) formulating a suitable research model for collecting and analyzing data, (4) Using the analyzed data to answer the research question. Furthermore, the four stages in an empirical research should start with the research purpose, this is usually what the research intends to find out. An appropriate methodology for the research can be identified only after the research purpose is clear and concise (Punch, 2003).

Empirical studies consist of two main types, they are: quantitative and qualitative research approach. The Quantitative approach is performed based on numerical data obtained about the population been studied and it uses statistical analyses for analyzing, interpreting, organizing and presenting the re-

sult of the study subject. Basically, quantitative approach involves the understanding and also investigating the reasons how and why about variables are associated with one another (Punch, 2003). The approach a researcher takes varies, it could either be a personal or impersonal approach. This means, in a qualitative approach a researcher is more active when compared to a quantitative approach. The researcher acts as an instrument that observes actions and interprets results in a subjective view. In the quantitative approach, the researcher decides on the methodology to be used in the study based on their own preference, however data collection must be done in an objective manner instead of subjectively (Stake, 2010).

As indicated earlier, the main objective of this thesis is to understand the psychological impact of online health mental community on its members, thus, the study adopts quantitative research approach. Quantitative approach will be utilized to quantify the findings of the current study through generating numerical data transformable into usable statistics. One of the benefits of using a quantitative methodology is that it can be used to quantify attitudes, behavior and opinions. It also defines other variables and generalize the outcome of the study from a large population sample.

According to Creswells (1994) a quantitative research approach utilizes surveys and experiment as a mean of collecting data. This study will use an online survey method to collect data from respondents. A questionnaire will be designed to gather information about user's online activity. This questionnaire will target users in an online mental health communities, such as, depression, anxiety, panic disorder, obsessive compulsive disorder and other types of mental illness. According to Holmes and Rahe (1967), questionnaires can be used to assess series of life events that might cause stress and the information respondent will provide can be converted into quantitative data for statistical analyses. Furthermore, Friedman & Rosenman (1974), added that questionnaires also provides researchers with large amount of data at a relatively low cost and respondents are asked the same questions in the same order. Alternatively, a laboratory experiment approach can be used as the method for data collection for this study. According to McLeod (1970), this method of experiment is conducted in an environment that is well-controlled. An example is the Milgram's experiment on obedience.

The empirical data collected in the current study was through an online survey. Utilizing an online survey as appropriate data collection method for the current study is described in the section below.

4.2 Survey as data collection method

A survey is a method of collecting a large amount of data from a large population sample within a short period. Generally, the questionnaires in a survey are self-administered that are usually distributed via web, post, or physically given to the respondent to fill. The method of data collection a survey employs is con-

sidered as a scientific method of data collection due to the controlled conditions it is carried out in (McNeill & Chapman, 2005).

The current study adopts an online survey method. Questionnaires used in the study are developed in a logical and systematic way by minimizing any personal influence in the result of the study. The results of the survey method are reliable because the collected data can be replicated and quantified easily, and the study finding can be re-verified. However, all surveys can't produce numerical data because when an open-minded questionnaire is administered to respondent, it requires to respond with words and this is a representation of a qualitative method of research (Punch, 2003).

However, those that advocate for qualitative research methods argue that surveys depend mostly on statistical tools and logic, and it does not provide a broad insight into the ways people notice and understand their lives (McNeill & Chapman, 2005). In line with the above study, Sue & Ritter (2011) gave a detailed report in their study about the various limitations encountered when using an e-mail and online surveys, such as disclosure of respondents' anonymity, limited access to the internet in some areas and in some cases limited population. In general, however, the responses in a survey cannot be guaranteed to be honest and accurate, the questions in a survey can be confusing to respondents or respondent might not be aware of the research topic or its purpose and this might lead to respondent providing answers that are irrelevant to the research. Despite the setbacks highlighted above, survey data collected is considered as the most applicable and appropriate method of data collection for the current study. Firstly, due to the context of the study, aiming to understand user online behavior, and thus, allowing to reach larger sample over the internet representing the entire population; secondly, conducting a survey, particularly in this case, will be the least costly and time consuming way to test the hypothesis.

4.3 Research Site

HealthUnlocked is a health social networking web community that utilizes a unique health artificial intelligence to provide support to its patients and to enable them to manage their personal health. HealthUnlocked recommends important contents, information and services tailored to the health needs of its members. The web community is known for providing an enabled support environment for different types of health conditions and empowering patients by engaging them to be fully involved and aware of their own healthcare.

The health social network hosts several online communities within a web platform that is dedicated to hosting health service website. The Health Unlocked website has more than 700 different health communities for an extensive range of wellness and health conditions. After a patient has registered to the site, the registered patient can join more than one of these online communities that provides information relating to their needs or health condition. Majority of these online communities are managed and partnered with health organiza-

tions, charities and non-profit organizations. Few of these health organizations are Anxiety and Depression Association of America (ADAA), The Multiple Sclerosis Association of America and the United Kingdom and the British Liver Trust. Every month over five million people from across the globe visit the platform and the majority of these visitors are from the United Kingdom and United States (Lomas, 2016). According to Alexa Internet, Health Unlocked is amongst the top 20 health websites that provide services to its users.

A study was conducted in 2017 by the University of Manchester and the outcome of the study suggest that Health Unlocked platform positively influences its users Patient Activation Measure (PAM). Furthermore, prior research conducted in 2016 by the University of Warwick found that the use of Health Unlocked brings people to come together and helps them to cope with and manage several illnesses such as diabetes, cancer and mental health problems ("Social media for health: who is doing it right?", 2017).

4.4 Data Collection

The instrument developed for the online survey was first pre-tested with colleagues to test if it is understandable, readable and free of errors before sending it to the online health community- HealthUnlocked. The result of the test led to minor modifications of the questions. For example, the construct of previous studies that measures online activity was worded as "How often do you visit online communities in the last 4 week, how engaged they were in the online community in the last four weeks". When applied to the current study, respondents answer would be limited to a short period and this might not provide sufficient answer based on respondents self-evaluation of psychological state. Therefore, the construct of the current study was operationalized with three-item scale "How often do you visit the online community, duration of average visit and how would you describe your level of engagement in the online community", which was considered to be unrestricted to time and easier to understand.

Data was collected via the Internet: by creating an online survey and distributing questionnaire in Google forms format. The online questionnaire was developed on the Google Survey platform. The survey invitation letter contained information on the objective of the study, anonymity of answers, and application of the findings only for academic purposes. The link to the online survey was included in the invitation letter, which when clicked; respondents will be presented with the questionnaire in a Google form format. Thereby, ensuring that participation in the survey was optional. Next, the questionnaire contained four sections. The first section measures users' online behavior, the second section measures social support, the third section measures social identification and the last section measures users' psychological well-being.

According to Leeuw (2005), when a single method of data collection is used in a survey, this method may lead to coverage bias. In addition, Co-

banoglu et al., (2001) suggest that adopting more than one method for collecting data in a survey sometimes results in a greater response rate. However, the application of several methods of data collection can also cause measurement differences, which could lead to incorrect results and conclusions. The four primary reasons for measurement errors are social desirability, primacy effects, question order effects and acquiescence (Dillman, Smyth, & Christian, 2014). According to Leeuw (2005), one of the methods that can be used to reduce the problems of measurement differences is to utilize uni-modal design of surveys for collecting data. Measurement Development

In the present context, the employment of a survey distributed only by web was the most efficient way to gather data for quick and easy analyses. The purpose of this present chapter is to specify the foundation of the constructs used in this study to assess users' psychological well-being. Several constructs have been applied in the current study to measure psychological well-being, namely, social support, social identification, and psychological flourishing scale. Application of the above listed theoretical construct is presented onwards.

The scale items created for the current study for the variables been investigated was based on previous research. The scale items used in the current study were modified so that it can fit into the present context. Online behaviour refers to the activity of users' and time spent on the online social network. The independent variable has been measured by a two-item scale adopted from (Batenburg & Das, 2015), and re-modified into a three-item scale to fit the current study. Social support is the feeling and perception that an individual is catered for, receives available support and assistance from others that all belong to a supportive social network. These resources provided to support the individual can be emotional support, informational support, esteem or technical support. A six-item scale adopted from (Moser, Stuck, Silliman, Ganz, & Clough-Gorr, 2012) has measured the social support independent variable. Social identification is referred to as the positive emotional valuation of the relationship that exists between self and in-group. A four-item scale adopted from (Postmes et al., 2012) has measured the independent variable. Psychological flourishing describes positive mental health. According to Fredrickson & Losada (2005), flourishing is when an individual is living a balanced life, one that requires optimal functioning, such as growth, goodness, generativity and resilience. The psychological flourishing scale was adopted from Diener et al, (2009). The dependent variable has been measured and observed with an eight-item scale that evaluates the aspects of psychological flourishing.

The overall survey questionnaire contained 29 items. The questionnaire was comprised of two parts: first part contained questions measuring respondents' perceptions towards each latent variable presented. Respondents were

also asked to grade their level of agreement with each item in the questionnaire by using a Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree) and also a Likert scale ranging from 1 (never) to 7(daily). The second part included questions on demographic characteristics of respondents, namely age, gender and education. Age was measured in years; gender was coded using 1 or 2 dummy variable, where 1 represented women and 2 represented men. In order to measure the level of education six possible answers were given, starting with “Didn’t complete high school” and ending with “Advanced graduate work or PhD”.

TABLE 1 Measurement items

Construct	Measurement item	Original source
Online behavior (OB)	<p>1. How often do you visit the online community? (Answer Categories: 1=Never; 2=Less than once a month; 3=Once a month; 4=Two to three times a month; 5=Once a week; 6= Two to three times a week; 7=Daily).</p> <p>2. Duration of average visits in an online community? (Answer Categories: less than 10 minutes; 10 to 30 minutes; once a month; 30 minutes to 1 hour; more than 1 hour; 2 to 3 times a week; daily)</p> <p>3. How would you describe your level of engagement? I started a new topic; I asked a question; I read posts from others; I reacted on someone else’s post; I answered someone’s question; I shared my experience.</p> <p>(Answer Categories1-Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)</p>	(Batenburg & Das, 2015).
Social support (SS)	<p>1. How often do you get suggestions in an online community about how to deal with personal problems</p> <p>2. How often do you find other users online to listen to their problems</p> <p>3. How often do you get good advice in the online community about how to manage crises</p> <p>4. How often online communities provide you with information to help understand a situation</p> <p>5. How often do you confide about your personal problems with other members in an online community</p> <p>6. How often do you get the advice you really want</p> <p>(Answer categories: none of the time; a little of the time; some of the time; most of the time; all of the time).</p>	(Moser, Stuck, Silliman, Ganz, & Clough-Gorr, 2012)
Social Identification (SI)	<p>1. I identify with an online community in press</p> <p>2. I feel committed to an online community</p> <p>3. I am glad to be in an online community</p> <p>4. Being in an online community is an important part of how I see myself</p> <p>(Answer categories: strongly disagree; disagree; somewhat disagree; neither agree nor disagree; somewhat agree; agree; strongly agree).</p>	(Doosje et al., 1998) (Leach et al., 2008) (Postmes et al.,2012)
Psychological well-being	<p>Answer these question based on your thought and experience before and after joining the online community.</p> <p>1. I lead a purposeful and meaningful life.</p> <p>2. My social relationships are supportive and rewarding.</p> <p>3. I am engaged and interested in my daily activities</p> <p>4. I actively contribute to the happiness and well-being of others</p> <p>5. I am competent and capable in the activities that are important to me</p> <p>6. I am a good person and live a good life</p> <p>7. I am optimistic about my future</p> <p>8. People respect me</p> <p>(Answer categories: strongly disagree; disagree; somewhat disagree; neither agree nor disagree; somewhat agree; agree; strongly agree).</p> <p>Note: Before and after joining the online community was coded as B_PSY and A_PSY respectively</p>	(Diener & Robert, 2009)

4.4.1 Online behaviour measurement

According to Batenburg & Das (2015), little is known about how users' online behaviours influence their' psychological well-being. Some online members in health-related groups are ghost members who barely post or comment, while some are very engaging and active compared to others. A survey was carried out on online members in a cancer patient group where these members were actively interactive and supportive, it was noted that the psychological well-being of this said group increased and their morale boosted. However, it remains unclear if patients felt better due to online participation, for example, lurking, posting, or both, or if these improvements occurred independently off online peer support (Lieberman & Goldstein, 2005). A Contemporary study suggests that lurkers may also benefit from just reading conversations of others, especially regarding information-related benefits, and active members' may experience additional psychological benefits because they are more engaged within the community (Uden-Kraan, et al. 2008). For example, a survey study conducted by Setoyama, Yamazaki, & Namayama in (2011) among cancer patients, the outcome of their study revealed that posters-active members encounter more psychologically promising processes than lurkers because the active members could express their emotions, help other patients, and receive emotional support. Another descriptive study among caregiver health communities showed that posting behaviours decreased the negative effect of caregiver strain, although, active presence online had no influence on this effect (Tanis, Das, & Fortgens-Sillmann 2011).

Therefore, to answer the current study research question, this study will evaluate the psychological impact of the relationship that exists between users and the online health community they belong to. Therefore, based on the above, the following hypothesis is proposed:

H2: Active members in an online health community will gain social support.

H3: Online social support positively affects psychological well-being.

The current study measures users' online behaviour by utilizing four measurement items suggested by Uden-Kraan, et al. (2008). These items include questions such as how often patients visited the online health community and a 7-point Likert scale was used to rate users responses. The scale ranges users' visit from never to multiple times per day. The average duration of these visits (less than 10 minutes; 10 to 30 minutes; more than one hour; daily). How engaged they were in the online community (I started a new topic; I asked questions; I read post from others; I reacted to someone else's post; I answered someone's question and I shared my experience). A 7-point scale ranging from never to daily was used to measure the level users' were engaged in the community. Since one of the goals of this study is to reveal how different levels of

users engagement in the online community affects their psychological well-being, each item was treated separately during data analyses.

4.4.2 Measuring social support, and capturing its essence

This particular section describes the development and analysis of a brief social support scale used in the current study to measure social support received in an online health community. The social support scale used in the current study was first introduced to patients in a study called the Medical Outcomes Study (MOS). This study was conducted for two years on patients with severe medical conditions. A survey carried out by the MOS was designed to include all aspects of social support as well as the different areas of social support. In other words, the MOS scale was meant to be distinct from other similar scale used to measure social support (Sherbourne & Stewart, 1991).

In recent years, studies have broken down social support into several parts in an effort to measure social support. As stated in the previous chapter, these parts often include components, such as, tangible, informational, emotional, network and esteem support. Messages shared by members in an online health community often contains these forms of support. Therefore, the current study will focus on all components of social support excluding tangible support because this type of support is offered with actions that require physical presence. In an online health community, emotional, informational, esteem and network support is the major support online communities provide when compared to other components of social support (Bambina, 2007). According to the author, emotional message is a message that contains empathy, concern, understanding, and esteem support in a message contains encouragement that increases self-esteem, while informational support is defined as the knowledge, advice and referrals offered. All this forms of support is offered within a network of social support.

In general, online health communities have shown their beneficial qualities. They help by means of providing social support, encouragement, understanding, guidance, aspiration and a sense of belonging to a community. Their online availability makes them more suitable and reachable. Further, its anonymity provides a feeling of safety to its users, ameliorates stigmatization, enhances problem support, self-disclosure and improvement in self-esteem (Hsuing, 2000). Social support has been shown to provide many benefits to the overall health including psychological well-being (Mehta & Atreja, 2018). Social support drawn from a variety of sources, such as, family, friends and communities has been associated with a better outlook and better emotional health, especially among patients with existing life stress that affects their mental well-being (Neuling & Winefield, 1988). According to prior studies on social support, empirical evidence shows that when patient receive adequate social support, they are likely not to experience the negative effects associated with lack of social support which is pessimistic attitude or deteriorating emotional health (Edmonds, Lockwood, & Cunningham, 1999)

Importantly, people dealing with mental illness are at high risk of been exposed to factors such as a low sense of connection to their learning environment, severe bullying or parental abuse when adequate social support is not given to them. Methods used to assess social support are quite varied due to different definitions of social support and the lack of a clear conceptualization of the concept (Neuling & Winefield, 1988). In recent years, however, studies have attempted to measure the functional components of social support (Cohen & Wills, 1985). This measurement approach mainly focuses on the structure of interpersonal relationships, whereby “structure” is seen as the way of living and quality of social relationships, for example, one’s status either married or in a relationship, number of friends and one’s social network. The above kind of social support is mostly measured in terms of the occurrence of or contact with prospective supportive persons. (Lentjes & Jonker 1985). One of the limitations with this measurement approach is that support is based on the social aid received via face-to-face meetings not through online communication.

4.4.3 Social support scale

Several available scales can be used to assess and measure social support. Despite the numerous scales available for assessing and measuring social support, the Medical Outcomes Study Social Support Survey (MOS-SS) scale is the most reliable scale of measurement. The MOS-SS is developed to assess and measure functional support in a community with ill persons. The MOS-SS is a self-administered measure that contains 19-item scale covering 4 areas of social support namely; informational or emotional support, instrumental and affectionate support, as well as optimistic social communication (Sherbourne & Stewart, 1991). The questionnaire in the MOS-SS was meticulously created from earlier tools used in measuring social support and is proven to be psychometrically reliable, sound and also is actually considered to be applicable universally (Sherbourne & Stewart, 1991). The items are brief, easy to understand, and a potentially useful and reliable tool for assessing social support (Ganz, et al., 2003).

The MOS-SS was modified to an 8-item scale to reduce respondent burden and it has been widely used in measuring social support in communities including an online cancer support community (Stuck et al., 2007). The modified version of the medical outcome study social support scale (mMOS-SSS) has two subscales covering two domains (emotional and informational social support). The subscales comprise of four items each item is designed to maintain the structure of the previous scale: MOS-SS and to identify the social support lapses that can be modified (Ganz et al., 2003).

As indicated earlier, both the MOS-SS scale and mMOS-SSS scale have an identical construct that can be used to measure and evaluate social support. The modified Medical Outcomes Study Social Support Survey (mMOS-SS) was re-modified into a 6-item measure of social support. The new scale captures all domains of support including the other components, such as, technical and es-

teem support, as well as the 19-item and 8-item measures of support. This study utilizes the re-modified social support scale, abbreviated into a 6-item capturing all areas of social support (Holden, Lee, Hockey, Ware, & Dobson, 2014).

4.4.4 Measuring social identification

This section will introduce the items used to measure social identification. The measures of social identification pertain to a range of topics and issues addressed within the social identity theory, one of which is a 4-item scale proposed by Doosje et al (1995). The items cover cognitive, affective, and evaluative components of identification. Social Identification is often misunderstood as social identity. In order to understand the difference between social identification and social identity, the current section will briefly review Tajfel's (1972) definition of social identity and social identification, as well as the components of social identification. Social identity is an individual awareness that he or she belongs to a certain group due to some emotional and value significance they share with the group. The group is a perceived entity. This entity has a range of characteristics associated with its membership, its norms, and its relationship with people that do not belong to the same group (Leach et al., 2008). Social Identification, on the other hand, refers to the individual member relationship to that entity (Tajfel's (1972). Furthermore, the author expatiates the concept of identification in one particular section of his work; Tajfel (1972) proposed that an intergroup behaviour occurs when there is an interaction between members of a group and members of another group. In summary, social identity is equated with the group and social identification is equated as the relationship to the group.

This current study utilizes the 4-item social identification measure (SISI) to identify the emotional connection between members in an online health community and the group they belong. To identify this connection, SISI will be used to rate the agreement of members in the online health community with the following statements. (1) 'I identify myself with an online health community', (2) 'I feel committed to an online health community', (3) 'I am glad to be in an online health community', and (4) 'being in an online health community is an important part of how I see myself'. Members agreement will be measured with a 7-point scale ranging from strongly disagree to strongly agree. According to Postmes et al (2012), several studies have attested to the reliability and validity of SISI based on an empirical study with a broad range of social groups and also because SISI is a multi-item measurement instrument that measures more than one of the respondent behaviour.

In the field of psychology, there have been efforts to develop a longer psychometric questionnaires (loo, 2002), in spite of this, researchers prefer to use shorter measurement scales because it is said to be pragmatic and that it consumes less time from respondents when filling the questionnaires (Robins, Hendin, & Trzesniewski, 2001). On the contrary, Burisch (1984) suggests that short scales can also be reliable and valid just like the long-term measurement.

In conclusion, the use of a short scale is not advisable if the scale intends to have a heterogeneous and broad construct (Loo, 2002). While this may be true, the use of short scales is also supported by several studies and considered reliable and acceptable when the concept behind its measures are clearly defined to assess homogeneous and broad construct (Loo & Kelts, 1998).

4.4.5 Components and dimension of social identification

Leach et al. (2008) proposed a solution to how several multi-dimensional approaches can be integrated into identification. This approach is based on a cogent conceptual framework that provides a clear and logical analytical tool applicable to different categories of identification. The framework organizes and gives an overall clear picture of each dimension integrated into identification (Reynolds, Turner, & Haslam, 2003). To begin with, this approach starts by assuming that social identification reflects on individuals' relationship with the members of the group they belong to, not with other group members. In another study, Postmes et al. (2012) adopted a hierarchical approach to identification and they proposed two dimensions to identification. The first dimension is referred to as self-investment. This dimension has three closely related components. The first component includes when individuals perceive their membership to the group as central to their sense of self. The second component of the first dimension is the feeling of satisfaction an individual derives from their membership. Lastly, the third component is the sense of unity and agreement an individual has with their group members. The second dimension is referred to as self-definition and has two components. The first component is when an individual stereotypes themselves as a member of a group. The last component of the second dimension is when an individual perceives the group they have psychologically identified themselves as a homogenous group.

A short and valid method to appraise identification was developed in 2012 by Postmes and colleagues. This method evaluates individuals' relationship with themselves and the relationship with the group they psychologically identify themselves with. This short method of evaluation is called the Single Item Social Identification measure (SISI). Numerous and prior studies estimate SISI to be reliable, satisfactory and that it meets all absolute standard of social identification measures when compared to other measures of social identification (Doosje et al., 1995; Leach et al., 2008). To measure identification, the current study utilizes the single item measure of social identification (SISI) to measure the emotional relationship that exist between members and the online health community they belong to.

4.4.6 Measures of psychological well-being

This section describes the psychological well-being measurement scale and why factors such as education, gender, age, work and income were utilized in the study as influencers of psychological well-being.

The Psychological Flourishing Scale was developed based on prior studies focused on the theories of social well-being and psychological well-being. The scale measures social-psychological prosperity and captures the major aspects of prosperity (Ryff, Keyes, & Hughes, 2003) such as the need that drives one to be successful and the need for self-acceptance (Diener & Ryan, 2009). The scale includes an 8-item measurement scale that captures important areas in the respondent's life perceived to be successful, such as, relationships, purpose, optimism and self-esteem (Schotanus-Dijkstra, et al. 2016). The current study utilizes the Flourishing scale to measure online health community members' psychological well-being. Members of the online health community that participated in this survey were asked to answer questions based on a 7-point scale. The scale measures to what extent they agree (7) or disagree (1) with each statement presented to them in the questionnaire. According to Ryff et al (2003), the flourishing scale is divided into six categories: Autonomy, personal growth, self-acceptance, purpose in life, positive relationship with others and the level of environmental awareness. The Flourishing Scale was designed on a closely related basis and it highlights the social facet of human mental prosperity (Schotanus-Dijkstra, et al. 2016). There are numerous well-being scales designed to evaluate pleasant and unpleasant human feelings, one of the most used well-being scale is the Positive and Negative Affect Schedule (PANAS) (Watson, 1988)

The PANAS was designed to measure emotional well-being and ill-being, and therefore assesses several states that are usually not regarded as feelings. Further, the scale does not measure vital feelings such as the positive or negative emotions that are considered essential to health and wellbeing (Diener et al, 2009). For instance, feelings like alert, one may feel alert but actually scared in a given circumstance, or an individual may feel excited and pleasant but not necessarily motivated. Therefore, the PANAS scale does not necessarily capture the true state or feelings of an individual. The above is a typical example of the positive affect items of the PANAS. The negative affect items of the PANAS scale can be classified as feelings that may have been experienced by an individual but not all these feelings are included in this scale, for example, negativity emotions like anxiety, depression, scary etc. Moreover, some feelings in the PANAS scale are denoted with the same adjectives, for example, feelings like nervous, scared, jittery and afraid are associated with anxiety (Watson, 1988). Therefore, the PANAS representation of positive and negative feelings is considered shallow (Diener et al, 2009). The PANAS scale excludes several important feelings, such as love and affections. Some feelings weren't assessed in the PANAS scale, these feelings includes jealousy, pride, happiness and contentment. However, the expanded version of the PANAS scale, which is known as the PANAS-X

assesses and includes many of the feelings omitted in the previous version. Nevertheless, the PANAS-X scale isn't the most proffered scale used in evaluating well-being due to its complexity and its evaluation of abstract feelings like self-assurance, gaiety, attentiveness to mention but a few are not exactly the type of feelings this study aims to assess and evaluate from the online health community members.

In conclusion, due to the several limitations to the PANAS well-being scale, the current study is motivated to utilize the Psychological Flourishing Scale. Diener et al. (2009) developed the Flourishing scale to assess, evaluate and address important areas in the respondent's life perceived to be successful. These areas of respondent's life include relationships with others, self-esteem, level of optimism and purpose in life. The elements of the Psychological Flourishing scale may also be an inducement that allows respondents to strive for adequate compliance of personal goals that correspond to their personal values. After all, psychological well-being is not only defined by the presence of physical health or the absence of mental illness, but by how positively reinforcing behaviours are implemented.

4.4.7 Education

In the current study, respondents' level of education was also measured because there exists a popular belief that for one to live a satisfying life, one has to be educated and intelligent. On the contrary, Gustave Flaubert best enunciated this sentiment through his popular statement: "To be stupid, selfish, and have good health are three requirements for happiness, though if stupidity is lacking, all is lost." Moreover, the link between intelligence as measured by IQ tests and psychological well-being seems to be virtually non-existent; however, according to prior studies, emotional intelligence have been linked to high well-being (Petrides & Furnham 2003).

4.4.8 Gender

In terms of the psychological well-being between men and women, it has been gathered that there is no significant difference between the genders when it comes to their psychological well-being. In data samples, women appear more frequently in an emotional evaluation that involves being extremely happy and extremely unhappy. One of the reasons tied to the over-representation of women in emotional evaluation is because according to an empirical study, women experience positive and negative emotions intensely and frequently when "compared to men (Diener & Ryan, 2009). In another study (Sandvik et al., (2009) showed that while men account for a higher percentage in emotional experience women percentage was lower. Although the level of emotional intensity in women was higher than men. Thus, while men and women show little relative distinctiveness in average psychological well-being, the percentage of

women at the extreme ends of well-being scales is higher than men (Diener et al., 1999).

4.4.9 Age

Previous studies on the assessments of psychological well-being in relation to age suggest that during the youthful age the level of well-being is high and consistent. The youthful age is the most active, vibrant, vigorous and interesting period in ones' life. This is the age of strength, the age knowledge and experience is acquired that prepares one for the middle age (Wilson, 1967). Contemporary studies on well-being and age also suggests that the satisfaction one derives in life tend to increase between the ages of 40 to 65 (Herzog et al., 1981; Horley et al., 1995), before declining only close to impending death (Mroczek & Spiro 2005). In spite of that, according to Deaton (2007), the author suggested that there is no consistent relationship between age and psychological well-being; however, there is a tendency for a decline in life satisfaction with age in poorer countries than in rich ones.

4.4.10 Work and Income

A large amount of research has provided evidence that high psychological well-being is linked to the fact that people who attain it enjoy their job irrespective of the nature of their job and likely earn more money than others (Diener et al., 2002; Lyubomirsky, King, & Diener, 2005). On the other hand, according to Diener & Seligman (2004), the researchers' postulate that earning a higher income may also mean one has to work more, have less leisure time and few social connections. In a study conducted on well-being and happiness, a comparison was made on the level of happiness and well-being between wealthier and poorer countries and the data showed a direct link to well-being (Staw, Sutton, & Pelled 1994).

In conclusion, one can imagine that living in poverty or having a job that provides low income can affect one's level of happiness, especially when ones' life is centred on surviving from day to day. It is important not to give much emphasis on the link that suggests that the level of happiness is closely linked to the income or work. Based on this, the current study will evaluate respondents' level of income and employment status and its' impact on their psychological well-being.

5 RESULTS

In order to answer the proposed research question, confirmatory factor analysis was used to evaluate the model's psychometric properties. In addition, the structural model evaluated the relationships between constructs.

5.1 Descriptive statistics

In total, one hundred thirty-three questionnaires were returned. All of them were fully completed with no missed answers. However, seven respondents answered the questionnaires twice and the duplicates were dropped from the final data set. This left one hundred twenty-six responses for further statistical analysis.

Table 2 presents sample characteristics. The data shows that 84% of responses belonged to women, and 42% to men. Majority of respondents (39%) had some college degree, 31% & 13% completed bachelors and master's degree respectively while 4% completed the advanced degree. 4% of the respondents didn't complete high school and 10% completed high school. Most of the respondents (85%) were between the ages of 18-40. Fifty-seven respondents (45%) have health problems, 29% have no health problems and 26% were not sure of their current health status. Table 1 also shows that 91% of the respondents browse the Internet several times a day, and only 2% use the internet a few times a month or almost never use it. Regarding psychological well-being, the majority of the respondents (53%) claims their health problems influence their psychological well-being and 47% claimed their psychological well-being is not influenced by their health problems or were not sure if it does.

TABLE 2 Sample characteristics

	Frequency	Percent (%)	Cumulative
Gender			
Female	84	67	67
Male	42	33	100
Age			
Younger than 18	10	8	8
18-25	18	15	23
26-40	56	44	67
41-55	23	18	85
56-65	9	7	92
Older than 65	10	8	100.
Education level			
Didn't complete high school	5	4	4
High School	12	10	14
Some College	49	39	53
Bachelor's degree	39	31	84
Master's degree	17	13	97
Advanced graduate work or Ph.D.	4	3	100.
Gross Income per annum			
Less than €10,000	29	23	23
€10,000 - €15,000	29	23	46
€15,000 - €20,000	12	10	56
€20,000 - €25,000	7	6	62
€25,000 - €30,000	7	6	68
€30,000 - €35,000	3	2	70
€35,000 - €40,000	11	9	79
€40,000 - €45,000	7	6	85
€45,000 - €50,000	3	2	87
Over €50,000	18	13	100
Internet use frequency			
Never/Almost never	-	-	-
Less than once a month	-	-	-
A few times a month	2	2	2
A few times a week	-	-	-
About once a day	9	7	9
Several times a day	115	91	100
Employment status			
Employed for wages	51	40	40
Self employed	5	4	44
Out of work & looking for work	16	13	57
A homemaker	6	5	62
A student	23	18	80
Retired	15	12	92
Unable to work	10	8	100

Health problems			
Yes	57	45	45
No	37	29	74
Maybe	32	26	100
Psychological well-being influenced by health problems			
Yes	67	53	53
No	35	28	81
Maybe	24	19	100

5.2 The measurement model

Table 3 presents the descriptive statistics of the research variables. The psychometric properties of the scale items were evaluated in terms of validity, item loading, convergent and internal consistency. The validity of the measurement model evaluates the extent which the measurement items represents the concepts being investigated. Validity refers to what should be measured, while reliability indicates how it should be measured (Hair, Anderson, Tatham, & Black, 1998).

TABLE 3 Descriptive statistics

Construct	Mean	S.D.
Online Behaviour	4.53	1.05
Social Support	3.27	0.53
Social Identification	4.85	1.31
Psychological well-being(before)	2.97	0.63
Psychological well-being (After)	4.83	1.33

First, the relationship and strength of each indicator was assessed by calculating item loadings. According to Fornell & Larcker (1981), item loadings with value greater 0.70 is considered acceptable and should be retained. In contrast to this, most literatures suggest a cut-off point below 0.4 (Stevens, 1992; Comrey & Lee, 1992). However, there are no specific rules for acceptable item loadings and it also depends on the instrument being used. As presented in Table 4, item loading for SS6 (0,183) reported the lowest loading while SI1 (0,973) reported the highest item loading.

Secondly, Cronbach's Alpha for each construct was calculated in order to evaluate the reliability of the scales. Cronbach's Alpha measures the internal consistency, that is, the relationship that exist between items in a construct. The measurement ranges from 0 to 1, but a high alpha value does not mean that the measurements actually reflect the study concept (Hair et al., 1998).

The values of Cronbach's alpha above 0.70 are considered acceptable as adopted from Venkatesh et al. (2012). As showed in Table 4, Cronbach's alpha for all factors in the model, the level of reliability was higher than suggested. The values for psychological well-being and social identification showed the highest reliability in terms of Cronbach's alpha and composite reliability values, while social support and online behaviour indicated the lowest reliability.

TABLE 4 Item loadings and reliability measures

Factor	Cronbach's alpha	Composite reliability	Item	Loading
OB	0,760	0,930	OB1	0,806
			OB2	0,795
			OB3	0,709
			OB4	0,735
			OB5	0,911
			OB6	0,677
			OB7	0,903
			OB8	0,778
SS	0,782	0,834	SS1	0,827
			SS2	0,695
			SS3	0,803
			SS4	0,915
			SS5	0,502
			SS6	0,183
SI	0,885	0,890	SI1	0,973
			SI2	0,922
			SI3	0,646
			SI4	0,703
B_PSY	0,931	0,929	B_PSY1	0,865
			B_PSY2	0,853
			B_PSY3	0,830
			B_PSY4	0,535
			B_PSY5	0,748
			B_PSY6	0,827
			B_PSY7	0,759
			B_PSY8	0,868
A_PSY	0,964	0,965	A_PSY1	0,912
			A_PSY2	0,718
			A_PSY3	0,932
			A_PSY4	0,947
			A_PSY5	0,870
			A_PSY6	0,858
			A_PSY7	0,912
			A_PSY8	0,880

OB: Online Behaviour; SS: Social Support; SI: Social Identification; B_PSY: Psychological well-being before joining the online community; A_PSY: Psychological well-being before joining the online community.

Third, convergent validity was evaluated using the extracted average variance (AVE). Convergent validity indicates the level of confidence that a construct is adequately measured by its indicators (Hair et al., 1998). AVE measures the level of variance that a construct captures, it is seen as the mean of square loadings per factor (Hair et al., 1998). To reach an appropriate and acceptable level of convergent validity, the AVE value for a latent variable should be greater than 0.50 (Fornell & Larcker, 1981). As presented in Table 5, the AVEs, for all latent variables reached acceptable levels. The smallest value of AVEs is the social support construct with a convergent validity of (0.580), and psychological well-being after joining the online community reported the highest value of convergent validity (0.776).

TABLE 5 AVEs, convergent validity

OB	0.629189
SS	0.580198
SI	0.677085
B_PSY	0.627987
A_PSY	0.776489

The results of the initial reliability and validity tests showed that nearly all measuring items were valid and reliable. However, the measuring item SS6 had a very low loading and a negative impact on the latent variable's validity and reliability levels. Thus, SS6 had to be deleted from the measurement scale. The AVEs, convergent validity test is presented in Table 5, values for social support were calculated without SS6 item. In the next section, an exploratory factor analyses of the structure of measurement model will be discussed.

5.3 Exploratory factor analyses of the structure of the measurement model

To explore the factorial structure of the measurement model used in the current study, an exploratory factor analyses using maximum likelihood estimation with direct oblimin rotation was performed on all 33 items. The Kaiser-Meyer-Olkin measures verified the adequacy of the data for analysis, KMO=.81. The sphericity test by Bartlett = 5854.013, $p < .001$, this indicates that the structure of the correlation is adequate for factor analyses.

TABLE 6 Exploratory Factor Analyses of all Items

Items	Factor					
	1	2	3	4	5	6
I identify myself with an online community (SI)	.767					
I feel committed to an online community (SI)	.724					
How often do you get good advice in the online community about how to manage crises? (SS)	.720					
How often online communities provide you with information to help understand a situation? (SS)	.716					
I am glad to be in an online community (SI)	.488					
How often do you find other users online to listen to their problems? (SS)		-.823				
How often do you get suggestions in an online community about how to deal with personal problems? (SS)		-.738				
How often do you confide about your personal problems with other members in an online community? (SS)		-.416				
Before joining the online community, My social relationships are supportive and rewarding. (B_PSY)			1.001			
Before joining the online community, I am optimistic about my future (B_PSY)			.911			
Before joining the online community, I am competent and capable in the activities that are important to me (B_PSY)			.853			
Before joining the online community, I am engaged and interested in my daily activities (B_PSY)			.817			
Before joining the online community, I am a good person and live a good life (B_PSY)			.794			
Before joining the online community, I lead a purposeful and meaningful life. (B_PSY)			.762			
Before joining the online community, people respect me (B_PSY)			.620			
Before joining the online community, I actively contribute to the happiness and well-being of others. (B_PSY)			.477			
I answered someone's question (OB)				.896		
I asked questions (OB)				.796		
I shared my experience (OB)				.766		
I reacted to someone else's post (OB)	.467			.574		
I started a new topic (OB)				.543		
After joining the online community, I am competent and capable in the activities that are important to me. (A_PSY)					.932	
After joining the online community, I am optimistic about my future. (A_PSY)					.855	
After joining the online community, I actively contribute to the happiness and well-being of others. (A_PSY)					.680	

After joining the online community, I lead a purposeful and meaningful life. (A_PSY)					.557	.410
What is your duration of average visit in the online community? (OB)	.445				.486	
After joining the online community, I am engaged and interested in my daily activities. (A_PSY)					.406	.406
After joining the online community, my social relationships are supportive and rewarding. (A_PSY)						.867
How often do you visit the online community? (OB)						.681
After joining the online community, People respect me. (A_PSY)					.384	.621
Being in an online community is an important part of how I see myself (SI)						.571
I read post from others (OB)	.320					.558
After joining the online community, I am a good person and live a good life (A_PSY)					.366	.538

Notes. Extraction Method: Maximum Likelihood; Rotation Method: Oblimin with Kaiser Normalization. Suppressed Coefficients: value below .30

The cut off point for maximum likelihood factor analyses is .40 and the criteria for Kaiser's eigenvalues is a value greater than 1 (Stevens, 1992). This produced a six-factor solution as the best fit for the data, accounting for 81.341% of the variance. The result of this factor analyses are presented in the table above.

All items measuring psychological well-being before joining the online community loaded on factor three, with factor loadings from .477 to 1.001. Four items measure social identification, three items loaded on factor 1, with factor loadings from .448 to .767 and the fourth item loaded on factor six with factor loading .571. Thus, the fourth item was not included in the measurement model. Five items measure social support, two items loaded on factor one, with loadings from .716 to .720 and three items loaded on factor three with loadings from -.416 to -.823. Thus, the two item loadings on factor one were re-named and added to the social identification construct. Five items measuring online behaviour loaded on factor four with loadings from .543 to .896, while two items have double loadings on factor one and one item have a single loading on factor 6. Thus, five items were extracted into the online behaviour construct and one item with the loading .486 was added to the psychological well-being construct after joining the online community. Thus, two items with single a loading of .681 and double loadings .320 and .558 were not included in the model. Eight items measure psychological well-being after joining the online community. 7 items from the eight items loaded on factor 5, with loadings from .366 to .896. One Item loaded on factor six with an item loading of .867, this item was not included in the model as well.

Interestingly, two factors obtained approximately the same eigenvalue. Social Identification and Psychological well-being before joining the online community had an eigenvalue of 12.87% and 12.97% and, accounted for 87.22% and 80.63% of the variance respectively. Online behaviour had an eigenvalue of 16.02% and accounted for 82.71% of the variance. Social support accounted for the lowest variance of 68.93% with an eigenvalue 18.37% while psychological well-being accounted for the highest eigenvalue of 80.27% and accounted for 80.27% of the variance.

5.4 Independent, dependent and control variable correlations

Bivariate correlations showed the relationship between the independent and dependent variables. It also showed which covariates, for example, offline factors were related to psychological well-being. A Pearson product-moment correlation coefficient was computed to assess the relationship between online behaviour and psychological well-being before joining the online community. There was no statistically significant relationship between the six items measuring online behaviour and psychological well-being before joining the online community, $r = .149$, $n = 126$, $p = .096$. Correlation between online behaviour and psychological well-being after joining the online community was also assessed. The relationship was a positive, moderate in strength and statistically significant, $r = .501$, $n = 126$, $p = .00$.

The three items measuring social support was not significantly related to psychological well-being before joining the online community, $r = -.006$, $n = 126$, $p = .943$. Correlation between social support and psychological well-being after joining the online community was also assessed. The relationship was a positive, moderate in strength and statistically significant, $r = .419$, $n = 126$, $p = .00$.

The five items measuring social identification was not significantly related to psychological well-being before joining the online community, $r = .101$, $n = 126$, $p = .261$. Correlation between social identification and psychological well-being after joining the online community was also assessed. The relationship was a positive, strong in strength and statistically significant, $r = .749$, $n = 126$, $p = .00$.

Regarding covariates, the level of education was not correlated with psychological well-being before joining the online community, $r = .010$, $n = 126$, $p = .909$ and was negatively significantly uncorrelated to psychological well-being after joining the online community, $r = -.016$, $n = 126$, $p = .856$.

Interestingly, age showed a negative, weak in strength and statistically significant relationship with psychological well-being after joining the online community, $r = -.185$, $n = 126$, $p < .05$. However, age was not significantly related to psychological well-being before joining the online community, $r = .085$, $n = 126$, $p = .345$ but

Employment status was uncorrelated with psychological well-being before joining the online community, $r = .111$, $n = 126$, $p = .216$ and was negatively not related to psychological well-being after joining the online community, $r = -.108$, $n = 126$, $p = .228$. Finally, income was also uncorrelated with psychological well-being before joining the online community, $r = -.095$, $n = 126$, $p = .291$ and was negatively not related to psychological well-being after joining the online community, $r = -.028$, $n = 126$, $p = .755$.

5.5 Hypothesis Testing

Social Identification

Regression analyses was used to assess whether all items measuring social identification significantly affects psychological well-being before joining the online community. The result of the regression suggested that social identification with an online community explained 1.0% of the variance, $R^2 = .010$, $F(1, 124) = 1.275$, $p = .261$ ^b. Social Identification with an online community have no significant relationship with psychological well-being before joining the online community, $\beta = .061$, $t = 1.129$, $p = .261$. However, all items measuring social identification had significant positive impact on psychological well-being after joining the online community (I identify myself with an online community: $\beta = .773$, $t = 13.488$, $p \leq .001$; I feel committed to an online community: $\beta = .702$, $t = 10.134$, $p \leq .001$; I am glad to be in an online community: $\beta = .398$, $t = 5.711$, $p \leq .001$; My needs are identified in an online community: $\beta = .959$, $t = 7.986$, $p \leq .001$; I am easily understood in an online community: $\beta = .1385$, $t = 10.815$, $p \leq .001$).

Online behaviour

Four items measuring online behaviour showed a significant positive relationship with the amount of social support received online (I answered someone's questions: $\beta = .147$, $t = 3.548$, $p \leq 0.05$; I shared my experience: $\beta = .130$, $t = 3.047$, p

≤ 0.05 ; I reacted to someone else's post: $\beta = .213$, $t = 4.460$, $p \leq .001$; How often do you visit the online community: $\beta = .330$, $t = 11.346$, $p \leq .001$; I started a new topic: $\beta = .269$, $t = 6.298$, $p \leq .001$). However, one item measuring online behaviour: "I asked question" showed no significant relationship with social support received online, $\beta = .096$, $t = 1.531$, $p = .128$.

Social Support

The result of the regression suggested that all three items measuring social support from an online community have no significant relationship with psychological well-being before joining the online community, $\beta = -.006$, $t = -.071$, $p = .943$. However, only two items measuring social support had significant positive impact on psychological well-being after joining the online community (Finding other users online to listen to their problems: $\beta = .956$, $t = 8.215$, $p \leq .001$; Confide about personal problems with other members online: $\beta = .828$, $t = 4.534$, $p \leq .001$). Surprisingly, one item measuring social support "How often do you get suggestions in an online community about how to deal with personal problems" showed no significant relationship with psychological well-being after joining the online community, $\beta = .117$, $t = .795$, $p = .428$.

5.6 Summary

The current chapter outlined the results of the quantitative research conducted. First, an analysis of the demographic properties of the data set was made, second, the characteristics of the measuring model was calculated, in terms of convergent validity, item loadings and reliability. Also, an exploratory factor analysis with direct oblimin rotation was conducted to explore the factorial structure of the measurement model. The results of the empirical data analysis conducted will be discussed in the next chapter. In addition, the study limitations and suggestions for future research will also be discussed.

6 Discussion

This study examined the significance of online support community and its effects on psychological well-being. The current study expected that patients who belong to a community in a social networking service for health will report a higher level of psychological well-being after joining the online health community (*Hypothesis 1*). Further, the current study hypothesized that users who are more active (i.e., post more messages, ask questions, share their experience and contribute more to the online community than average) will gain more social support online than members who are less active (*Hypothesis 2*). Finally, the study hypothesized that patients who receive support in an online support would report a higher level of psychological well-being (*Hypothesis 3*).

6.1 Key findings

Social identification had strong influence on psychological well-being after joining the online health community. All items measuring social identification had a significant positive influence on psychological well-being. Items such as, my needs are identified in an online community and I am easily understood in an online community reported a strong positive influence on psychological well-being. This means patients who visit the online health community feel good about themselves and gain a sense of worth when other members in the community accepts them and identify their need. Two items measuring social identification: I identify myself with an online community and commitment to an online community, showed moderate positive influence on psychological well-being while the fifth item: I am glad to be in an online community, reported a considerable positive impact on psychological well-being. This findings also suggest that patients felt they were an integral part of the online community and they experienced a personal feeling of involvement.

Findings partially support hypothesis 2. The hypothesis proposed on the basis of online behaviour and its effect on psychological well-being depicts that

users will receive social support online based on certain types of online behaviour. Specifically, online behaviour, such as, I asked questions, showed no significant relationship with online social support. However, other online behaviours (answering other users' questions, starting a new topic in the forum for discussion, frequent visit to the online community and sharing experiences) were directly related to the amount of social support received in an online health community.

Online social support in terms, of its impact on psychological well-being did have a positive effect on patients' psychological well-being after joining the online support community. Items measuring social support such as, finding other users online to listen to their problem and confiding with other members online about their personal problems showed a positive correlation with psychological well-being after joining the online community. However, only one item measuring social support (i.e., How often do you get suggestions in an online community about how to deal with personal problems) showed no relationship with psychological well-being after joining the online community. Thus, these findings partially supports Hypothesis 3.

And lastly, although five control variables were included in the model, only age was found to have a considerable weak influence on psychological well-being after joining the online community. Explanation for this correlation might be that the satisfaction for life one derives in life tend to increase between the age of 40 to 65 (Herzog et al., 1981; Horley et al., 1995), according to the descriptive statistics in Table 2, ages between 40 to 65 accounts for 33% in the age category, which tends to be the highest in all age categories.

6.2 Limitations and future research

This section provides several constraints of the study and direction for future research. As stated previously, the aim of this study was to provide the psychological impact of online support community on patients' mental health, the research was conducted on an online social network service for health – HealthUnlocked. Although, the questionnaire stated that this study was an academic research and all responses are going to be treated anonymously, patients in the anxiety group expressed excessive worries and agitation over the confidentiality of their contact information, despite not been asked to provide any. Additionally, some respondents belonging to more than one mental health group participated in all the surveys sent across different communities. Thus, some degree of bias might be present in the empirical data. Moreover, literature on the impacts of data collection methods warns about the variations in responses that could be imposed by the specifics of a survey design (Leeuw, 2005). For example, digitally distributed surveys enable participants to be concurrently engaged in multiple assignment and to skip between various topics, thus becoming impatient or disordered in their responses.

Future research should look into the how social media websites, such as Facebook, Instagram and twitter affects patients with mental illness. Finally, the online survey was conducted between July-August 2018. Thus, the short time span and data collection method might have affected the generalizability of the results by limiting it. Thus one could apply a qualitative method, such as open-ended questions and interviews in a controlled environment.

7 Conclusion

Online health communities is a platform that provides patients, families and caregivers the means to learn about an illness, seek and provide support, and develop wide solutions beyond the health system. This current research was driven primarily by the interest of the author in understanding the psychological impact of online health communities on its users'. Therefore, the author of this present thesis hopes that online health communities can be used as an aid to ameliorate symptoms that deteriorate psychological well-being.

This thesis examined the significance of online health communities and its impact on psychological well-being. The research model was built based on the well-grounded theories on psychological well-being. Based on the comprehensive review of literatures, several other factors have been integrated: online behavior; social identification; social support and psychological flourishing scale were used to assess and measure psychological well-being.

The survey data was collected in an online health community- HealthUnlocked. A self-administered questionnaire was digitally distributed to increase coverage of the responses. Data collected was completed within 8 weeks and the number of responses reached was 133, 7 out of which was not included due to duplicates in answer on all survey questions.

The findings of this thesis revealed that online health communities positively impacts psychological well-being. Users who identified themselves with the online community: social identification, reported a strong improvement in psychological well-being after joining the online health community when compared to their psychological state before joining the online health community. In addition, users who visit the online health community for informational and emotional support: social support, or were engaged in and frequently visited the online health community: online behavior, reported a considerable positive impact on their psychological well-being after joining the online support community. Finally one control variable namely age had a weak, positive impact on psychological well-being. Overall the developed model accounted for 81% of the variance.

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APPENDIX 1 Questionnaire

Which online community are you currently participating in?

Please answer the questions below regarding your participation in that online community.

ONLINE BEHAVIOUR MEASUREMENT

1. How often do you visit the online community?

1. Never
2. Less than once a month
3. Once a month
4. Two to three times a month
5. Once a week
6. Two to three times a week
7. Daily

2. Duration of average visit in an online community

1. Less than 10 minutes
2. 10 -30 minutes
3. Once a month
4. 30 minutes to 1 hour
5. More than one hour
6. Two to three times a week
7. Daily

How would you describe your level of engagement?

1- I started a new topic:

(1-Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)

2- I asked questions:

(1-Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)

3- I read post from others:

(1-Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)

4- I reacted to someone else's post:

(1- Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)

5- I answered someone's question:

(1- Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)

6- I shared my experience:

(1- Never, 2- Less than once a month, 3- Once a month, 4- Two to three times a month, 5- Once a week, 6- Two to three times a week, 7- Daily)

SOCIAL SUPPORT MEASUREMENT

1- None of the time

2- A little less of the time

3- Some of the time

4- Most of the time

5- All of the time

1. How often do you get suggestions in an online community about how to deal with personal problems?
2. How often do you find other users online to listen to their problems?
3. How often do you get good advice in the online community about how to manage crises?
4. How often online communities provide you with information to help understand a situation
5. How often do you confide about your personal problems with other members in an online community
6. How often do you get the advice you really want

SOCIAL IDENTIFICATION MEASUREMENT

1- Strongly disagree

2- Disagree

3- Somewhat disagree

4- Neither agree nor disagree

5- Somewhat agree

6- Agree

7- Strongly agree

1. I identify myself with an online community
2. I feel committed to an online community
3. I am glad to be in an online community
4. Being in an online community is an important part of how I see myself

PSYCHOLOGICAL WELL-BEING MEASUREMENT

- 1- Strongly disagree
- 2- Disagree
- 3- Somewhat disagree
- 4- Neither agree nor disagree
- 5- Somewhat agree
- 6- Agree
- 7- Strongly agree

Answer these questions based on your thought and experience before joining the online community.

1. I lead a purposeful and meaningful life.
2. My social relationships are supportive and rewarding.
3. I am engaged and interested in my daily activities
4. I actively contribute to the happiness and well-being of others
5. I am competent and capable in the activities that are important to me
6. I am a good person and live a good life
7. I am optimistic about my future
8. People respect me

Answer these questions based on your thought and experience after joining the online community

1. I lead a purposeful and meaningful life.
2. My social relationships are supportive and rewarding.
3. I am engaged and interested in my daily activities
4. I actively contribute to the happiness and well-being of others
5. I am competent and capable in the activities that are important to me
6. I am a good person and live a good life
7. I am optimistic about my future
8. People respect me

INTERNET EXPERIENCE MEASUREMENT

On the average, how frequently you use the Internet?

1. Never/Almost never
2. Less than once a month
3. A few times a month
4. A few times a week
5. About once a day
6. Several times a day

EDUCATION MEASUREMENT

What is the highest degree or level of school you have completed?

1. Didn't complete high school
2. High School
3. Some College

4. Bachelor's degree
5. Master's degree
6. Advanced graduate work or Ph.D.

EMPLOYMENT MEASUREMENT

Employment status: Are you currently...?

1. Employed for wages
2. Self-employed
3. Out of work and looking for work
4. Out of work but not currently looking for work
5. A homemaker
6. A student
7. Retired
8. Unable to work

INCOME MEASUREMENT

How much is your GROSS income per annum?

1. Less than £10,000
2. £10,000-£15,000
3. £15,000-£20,000
4. £20,000-£25,000
5. £25,000-£30,000
6. £30,000-£35,000
7. £35,000-£40,000
8. £40,000-£45,000
9. £45,000-£50,000
10. Over £50,000

Do you have any health problems?

Do you feel your psychological well-being is being influenced by your health problems?

GENDER

- 1- Female
- 2- Male

AGE MEASUREMENT

1. What is your age?
2. 1-Younger than 18 years
3. 2-18 to 25 years
4. 3-26 to 40 years
5. 4-41 to 55 years
6. 5-56 to 65 years
7. 6-Older than 65 years