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The role of paralinguistic digital affordances (PDAs) in online mental health communities (OMHCs) in Saudi Arabia

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Abstract

Introduction. Depression is a major contributor to disability and will be a leading cause of global disease burden by 2030. There is a high depression rate in Saudi Arabia. Online Mental health communities (OMHCs) are important for people with mental health conditions who are concerned about the stigma associated with these conditions. Paralinguistic digital affordances (PDAs) are a useful social affordance enabled by social media. This study aimed to understand the role of using PDAs in Saudi OMHCs.

Method. Qualitative methods were employed to analyse a sample of 1331 posts from two Saudi OMHCs.

Analysis. Data were thematically analysed using Braun and Clarke's method.

Results. PDAs fostered receiving emotional and informational support and were used to communicate frustrating emotions. A variety of emojis was used to provide encouragement to other users in response to their posts and conveyed different forms of support. PDAs were also used to show empathy and to acknowledge other people's feelings and to reassure them. However, on occasion, PDAs were used in a negative way.

Conclusion. PDAs provide additional emotional and informational support to encourage people with depression in OMHCs. Future research could interview OMHC users to develop a deeper understanding of how PDAs provide support.

Introduction

Mental health is considered to be one of the fundamental aspects of overall health and well-being, and is affected by a range of mental illnesses, including depression, anxiety, and stress. Depression is one of the most prevalent, complicated, and harmful mental health illnesses (Durbano et al., 2024; McLaughlin, 2011). Globally, it is a significant cause of disability and is expected to be the leading cause of disease burden by 2030 (Lopez & Murray, 1998; Rostek & Gamble, 2020). The World Health Organization (WHO, 2023) estimates that approximately 3.8% of the world's population is currently experiencing depression, and the number of people affected is rising. It is considered a global public health concern that affects people of all ages and is an underlying reason for self-harm and suicide (Nusawat & Leelasantitham, 2024; Xiao et al., 2022).

Saudi Arabia is similar to many other countries in that depression is considered one of the leading mental health illnesses. Alhabeeb et al. (2023) estimated that the prevalence of major depression disorder (severe depression) in Saudi Arabia is 12.7%. The prevalence of depression varies considerably across the 13 regions of Saudi Arabia from 8.2% (Qassim and Hail) to 19.5% (Najran). Recently, Odah et al. (2024) conducted a study in southwestern Saudi Arabia and found the average prevalence rate of depression to be 68.1%. The distribution of this prevalence was mild (28.2%), moderate (21.9%), moderate to severe (12%), and severe (6%). The high depression rates are a major public health concern in Saudi Arabia.

Social media has become an important part of people's lives (Nusawat & Leelasantitham, 2024). Social media significantly improves the capacity of user-generated content and allows people to communicate with others at any time. It provides users with a virtual space to communicate with others in a relatively fast and inexpensive way. Social media has become a convenient means for sharing and exchanging health-related information with others (Lin & Kishore, 2021; Yoon & Syn, 2023). Individuals can share health topics, advice, as well as their personal health experiences (Hargreaves et al., 2018; Lovatt et al., 2017). Social media facilitates collaboration and communication among patients with specific health conditions.

Social media has transformed how individuals communicate, interact, and how they perceive social support. With various features and functionalities, it provides opportunities (affordances) for individuals to access and potentially engage in social support. Although several studies have examined health information behaviour within the context of social media (Afful-Dadzie et al., 2023; Kanchan & Gaidhane, 2023), little attention has been paid to the effect of its features in the health context (Wu et al., 2024; Zhang et al., 2018). Exploration of the integration of social media features and user actions, i.e., social media affordances related to health information, could offer a potential understanding of the complex role of social media in the health context (Wu et al., 2024). Additionally, Natterambo (2022) indicated that few studies have investigated how social media affordances influence mental health. Addressing this gap is critical for developing a deeper understanding of the complexities of social media use in the context of mental healthcare.

One of the affordances of social media is paralinguistic digital affordances (PDAs), which refer to symbols in social media messages that facilitate interaction between individuals without determining a specific language; examples of these symbols include 'emojis' (e.g., 😊), 'liking' a message (e.g., 👍) (Hayes et al., 2016b), stickers or avatars. Additionally, PDAs can include the number of emojis and likes attributed to a post. PDAs are not only about emojis or emoticons and how users interact with them but also include the context in which users apply them.

Few studies have investigated the effect of emojis in text, as well as the various text and emoji combinations, on users' mental state (Pfeifer et al., 2022). The underlying mechanisms of the role of PDAs could be illuminated by social support theory, since social support has been indicated as a main driver of social media activities, including for the provision of mental health information.

In Saudi Arabia, seeking and accessing online health information has become increasingly common. According to Madhi et al. (2020), online health information is often accessed via social media platforms such as X (formerly Twitter), Snapchat, and online communities. Online health communities in Saudi Arabia have been only recently initiated, yet people have already started to use them to share their experiences. However, to the best of the authors' knowledge, no study has investigated the role of PDAs on social media in the Saudi health sector. Therefore, the aim of this paper is to investigate the role of PDAs in perceiving social support in online mental health communities (OMHCs) in Saudi Arabia.

The following section first provides a theoretical background of the affordance lens and social support theory. Then, through a qualitative study design using online posts, the role of PDAs in receiving social support in OMHCs is investigated. Finally, the paper discusses the findings and implications.

Literature review

Social media affordances

The term 'affordance' was first coined by Gibson (1977) in the context of ecological psychology and analysed the relationship between the environment and animals. Generally, affordance refers to opportunities for action that a person (subject) perceives while interacting and communicating with an object or artefact. Therefore, affordances are neither subjective (actors) nor objective (artefacts); they cross the dichotomy between subjective and objective. However, Norman's (1988) definition refers to the properties that include both perceived and actual things that identify how things might be used. Ronzhyn et al. (2022) debated the differences between Gibson's (1977) understanding of affordances, which separates the actor from the action, and Norman's (1988) understanding of affordances, which stand or exist if they are perceived by a subject (actor). The main theme of all the extant definitions is that affordances involve an object that facilitates an action (Leidner et al., 2018).

As the term has developed, researchers have proposed technology affordance theories. Technology, an object, can provide numerous affordances. Technological affordances can be defined as opportunities for action offered to an individual by technological artifacts (Argyris & Monu, 2015; Gibson, 2014). There is a relationship between individuals and the material properties of a technology (Vaast et al., 2017). Caliandro and Anselmi (2021) proposed that technological affordances reside in a group of contextual limitations and props that characterize technology use. Since they are relational, perceptual, and contextual, the same technologies, even the same technological properties, can lead to different affordances (Ronzhyn et al., 2022; Treem & Leonardi, 2013). Moreover, how these affordances apply to different users will vary (Steinert & Dennis, 2022).

Social media affordances are considered a stream from technological affordances. Ronzhyn et al. (2022) defined social media affordance as how an individual can perceive actual or imagined properties from social media that are the result of the technological, social, and contextual relationship. This relationship enables and shapes the specific usage of platforms. The design of social media features allows individuals to share knowledge that increases user engagement and potential perceiving social support (Lin & Kishore, 2021; Majchrzak et al., 2013; Treem & Leonardi, 2013).

Various studies have incorporated affordance as a valuable theoretical lens for investigating the effects of media platforms on society (e.g., Vaast et al., 2017). Four types of social media affordances were proposed by Treem and Leonardi (2013) in an organizational context. The first is visibility, which means that employees can make information and expertise more visible to others. The second is editability, which means messages can be created, edited, and improved before being published. The third is persistence, which enables employees to understand their past and present workplaces and their co-workers. The fourth is association, which includes how social media

enables employees to exchange and sustain relationships between them, as well as between employees and content experience-related information. These affordances contribute to noticeable knowledge exchanges. Lin and Kishore (2021) proposed three further social media affordances in the health context: community co-creation, social learning, and social relationships. Community co-creation in social media includes when patients seek or offer information, such as asking questions, and this can foster information support. The affordance for social learning is the process by which individuals with common interests or concerns can communicate, interact, observe, and learn from each other (Conte & Paolucci, 2001). For example, patients can observe others via online groups to learn how to cope with a specific illness, which can foster experience support. The third affordance is for social relationships, which means developing and maintaining social relations between users in social media, which can foster emotional support. These affordances contribute to social support. Lu et al. (2024) proposed three digital affordances that can be applied to social media or other technology and were applied in a health crisis context. These affordances were sharing information, sharing knowledge and socializing, and they can enhance the ability to receive social support.

Evidence from prior studies has revealed that social media affordances enhance user engagement through their properties or features, such as sharing information tasks. In turn, individuals become capable of creating value and expanding resources in their preferred ways. Moreover, Karahanna et al. (2018) found that social media features provide or facilitate social media affordances that generate outcomes, which can be knowledge sharing or perceived social support. A further important social media affordance is PDAs (Sun et al., 2021), which is discussed in the following section.

Paralinguistic digital affordances (PDAs)

PDAs are phatic communications that offer diverse social media functions or features, such as 'likes' and 'emojis'. One of the main motives for using PDAs in social media is to offer social support (Carr et al., 2016; Hayes et al., 2016b; Lyubenko, 2023; Sun et al., 2021). Several studies have investigated PDAs as a form of perceived social support. For example, Rawlings (2023), using a quantitative approach, found that receiving likes on Facebook is associated with social support. Johnson et al. (2020) collected posts related to infertility treatment and used content analysis to examine emoji use and social support on Instagram. One of their findings was that users received emotional support when they engaged in self-disclosure.

Various studies have highlighted how affordances are a relational property because different individuals may possess varying abilities, leading them to perceive and use social media platforms in different ways (Gibson, 2014; Page et al., 2022). Moreover, individuals seek various aspects of support on social media, depending on platform features and the user services (Hayes et al., 2016a). Even though affordances are similar in online health communities and general-purpose social media, health-focused online communities must consider the underlying contextual differences (Smith et al., 2023). Compared to other online health communities, posts in OMHCs have been shown to have more expressions of emotion (Gu et al., 2023). Thus, it is important to investigate PDAs in the context of OMHCs to gain a better understanding of how and why they are used in these platforms. This study examined how people with depression incorporate and use PDAs in their responses to OMHCs and investigated the role of PDAs in the relatively new context of OMHCs in Saudi Arabia.

Several studies have focused on investigating PDAs from a microscopic point of view, such as the frequency of PDA use (Marengo et al., 2021; Tang, 2022). The collective aspect of PDA use has been largely overlooked (Sun et al., 2021). Therefore, OMHCs feature the combination of emojis with text for social support extraction; hence, an analysis of both written text and visual symbols is needed to obtain better insights into people's emotions and how people engage in such communities. It is also necessary to investigate the outcomes from using PDAs and social support for people with

depression, as these outcomes do not always align with what they were likely intended to be. Thus, the study aimed to understand the role of PDAs in potentially benefiting or harming people with depression in OMHCs.

Social support theory (SST)

SST was initially developed in the mid-1970s and early 1980s. Formulated by Cobb (1976), SST describes information that can lead an individual to believe that they are loved and respected and that they belong to a community that provides mutual obligations. At its core, SST posits how social support might help others effectively, with individuals offered assistance available on a network. SST provides a person's perceptions of a situation and involves respect, concern, or responsible regard for others. Cobb (1976) posited that social interaction can help individuals develop mental health resilience to negative emotions. Thoits (1982) indicated that the concept of social support is the degree to which individual social needs are fulfilled via interaction with others. Here, social support emphasizes the exchange of resources over interpersonal connections (Cohen & Hoberman, 1983). Subsequently, Shumaker and Brownell (1984) highlighted that the concept involves an exchange between at least two users to improve the well-being of the receiver (of the support). According to SST, the support that users receive (e.g., receiving care and help from the community) may improve their sense of competence (Hasan et al., 2023). The main role of social support concerns people's ways of encouraging and helping others to experience more confidence in social settings. Therefore, establishing trust among members and addressing members' psychological needs are important (Islam et al., 2018).

Generally, the existing literature has classified social support into various taxonomies. Information and emotional support are the main types of social support. Emotional support includes listening to others, offering encouragement, and showing trust, empathy, understanding, and concern (Johnson & Lowe, 2015; Krause, 1986; Zeitouni & Milstein, 2017), for example, making patients feel loved, valued, and empathized with. Informational support includes providing assistance in the form of knowledge, transmitting information, guidance, and advice, and helping others to make decisions and to minimize uncertainty, for example, when patients discuss health topics such as symptoms or how to cope with disease. This paper investigates how people with depression use PDAs to foster emotional and informational support.

Method

This qualitative study explored PDA use for people with depression in OMHCs in Saudi Arabia. Data were collected using online posts from two OMHCs in Saudi Arabia. There are various reasons for utilizing online posts, for example, to explore, elaborate, and enhance the understanding of the role of PDAs (such as how patients use these PDAs in seeking or offering social support in OMHCs). Collecting and analysing online posts also allows investigating patients' experiences and views without any explicit involvement or implicit interference: this approach has been used successfully in previous studies (Hargreaves et al., 2018; Lovatt et al., 2017; Xu & Li, 2023).

Study setting

Amer is one of the first OMHCs in Saudi Arabia, and it is approved by the Ministry of Health. The platform has 13 forum boards, such as '*the past*', '*self-development*', and '*finding balance*', and various features that enable people with depression to write posts, adding text, emojis, and hashtags. People can read and reply to a thread or another comment in the same thread by either writing a comment and adding emojis or adding any PDAs, including likes, emojis, or other visual icons. The second OMHC is the Telegram public group, run by a moderator (not a therapist). This community discusses depression. Figure 1 presents examples of emojis used on Amer and the Telegram public group. The posts are public and written in Arabic. Additionally, people can anonymize themselves. The authors contacted the gatekeepers for their approval and obtained ethical approval, as described in the next section.

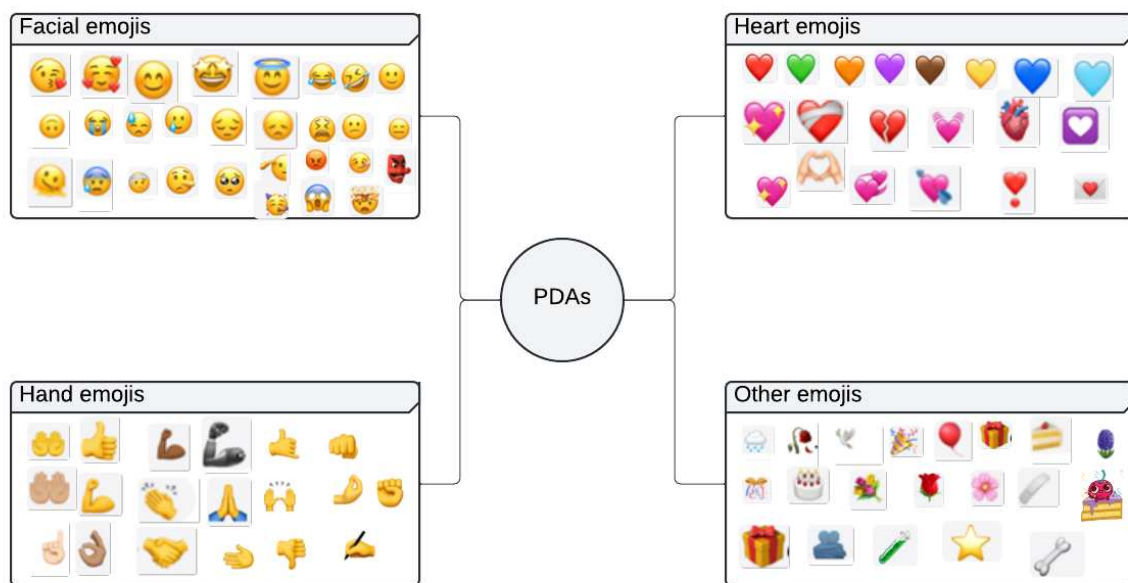


Figure 1. Examples of paralinguistic digital affordances (PDAs) used in Saudi OMHCs

Ethics approval

Ethics approval was obtained from the University of Sheffield in May 2024 (application no.: 059127). We received permission from OMHC gatekeepers to access and analyse the data, which are posts available to the public. The study followed the University of Sheffield research ethics policy (University of Sheffield, 2023).

Confidentiality

One of the OMHCs has been renamed Amer to maintain its anonymity. Additionally, all details of posts were anonymized to ensure the confidentiality and privacy of the posts. Posters' usernames were removed and replaced with pseudonyms. The quotations used in this study were translated into English. For posts with identifying markers after translation, the researcher changed the words of the posts but kept the same meaning; however, in practice, this was rarely necessary.

Sampling strategy

For Amer OMHC, the forum boards were selected purposively based on their richness and relevance to the study's topic. Four boards were selected: self-development, general, recovery stories, and health. A sample of the data (1331 posts) related to threads in those boards and the Telegram public group was collected. The posts were sampled to reflect patients' beliefs and provide different views. Data were stored and managed using ATLAS.ti. Inductive and deductive thematic analyses were conducted.

Data preparation and analysis

After collecting the posts from the two OMHCs, the researcher (SAR) prepared the data for analysis. They downloaded the threads and stored them in WORD files prior to being anonymized. The files were converted to PDFs and uploaded into ATLAS.ti. The posts were analysed in Arabic. Materials that needed to be quoted or discussed in detail with the other members of the research team were translated into English.

Thematic analysis was conducted to analyse the collected posts (Braun & Clarke, 2006). Thematic analysis is a frequently used method of analysis in social and health care studies (Pope & Mays, 2020; Swain, 2018), and several studies have used it in the online health community context

(Hargreaves et al., 2018; Lovatt et al., 2017). Thematic analysis is not concerned with a particular philosophy or epistemology and, therefore, can be used in various epistemological methods (Braun & Clarke, 2006). In addition, it has the flexibility to identify relations (patterns) within data related to participants' views, experiences, and behaviours (Clarke & Braun, 2017).

The collected posts were analysed, following Braun and Clarke's (2006) guidelines, as shown in Figure 2. The posts were read several times, and any ideas formulated while reading were written down. Data features that addressed the research topic were then coded. The codes were shared within the research team for discussion and agreement. The codes were then organized thematically into meaningful groups; codes that appeared consistently and were similar were considered inductive themes.

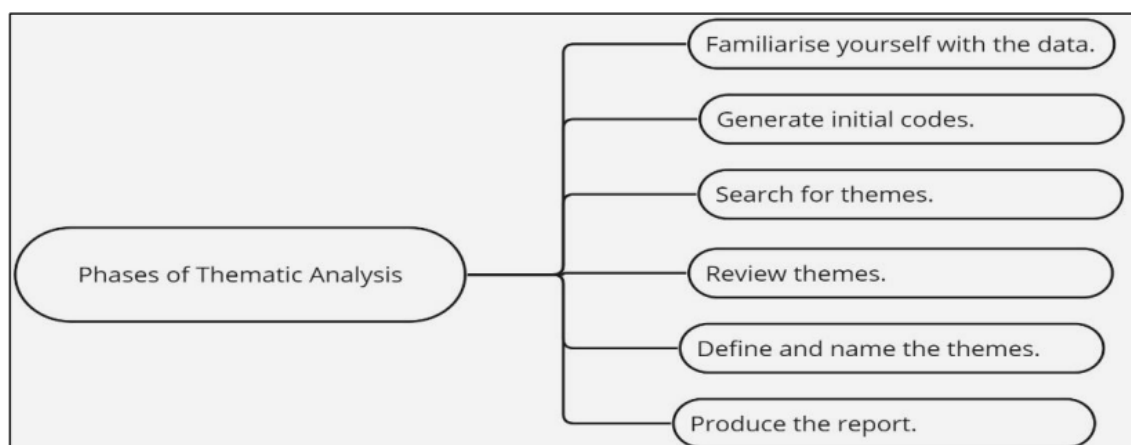


Figure 2. Phases of thematic analysis (adapted from Braun and Clarke, 2006)

Results

After analysing the data, three main themes emerged relating to the use of PDAs: emotional support, informational support, and PDA as a harmful tool. The integration of these themes provides a holistic understanding of how PDAs are used for people with depression in OMHCs in Saudi Arabia.

Emotional support

Four subthemes were identified from the analyses under the overarching main theme of emotional support:

- Encouragement
- Empathy
- Acknowledgment
- Offering kindness and well-wishing

The subthemes were analysed using sample data that mainly used PDAs such as likes, emojis and other visualization symbols.

Encouragement

In the sample, many users shared their achievements in their depression journey, while others encouraged them by using PDAs, for example:

by the grace of God, I've successfully overcome a depressive episode. And by God's will, others will be able to as well 🍀🙏. (Samer, General)

Others responded using a variety of PDAs, as shown in Figure 3:



Figure 3. Reactions to Samer's post.

As a sense of achievement, Samer shared that he overcame a depression episode, and some users encouraged him by providing the above emojis, e.g., a thumbs-up sign to indicate approval, and an arm symbol to indicate strength. PDAs help people to offer support more easily and faster in a single click. This is especially useful in a depression context, where some people may have difficulty writing and reviewing the post. PDAs can facilitate the process of providing support to others. On the other hand, posters who receive these PDAs as a way to encourage them may be helped in terms of receiving various emojis, with different styles and frequencies for each PDA.

Just a day after my surrender, and collapse, I decided to return stronger. Of course, this strength comes from God, then your words 🧑🧑🧑🧑. (Thai, General)

Others responded with different emojis, as shown in Figure 4:

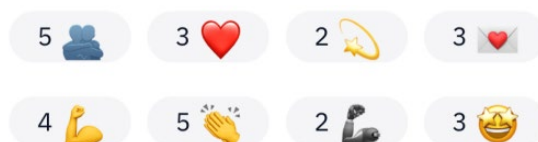


Figure 4. Reactions to Thai's post

Thai shared a thread that she got stronger and overcame her problems, while some users used PDAs to encourage her. The diverse PDAs used indicate various positive feelings for the poster, such as graduating, loving what she did, admiring her post, and applauding her. All these affirmative feelings can provide emotional support and encouragement to a person.

Today, I accomplished something really great. And I have no one to share my joy with, so please cheer me on! (Hessah, General)

Others responded, as shown in Figure 5:



Figure 5. Responses to Hessah's post

Hessah felt loneliness and wanted to share her achievements with others. While some users used PDAs to offer support, she received diverse PDAs that can be interpreted with various positive feelings, such as encouragement and love.

The above quotations demonstrate how Samer, Thai, and Hessah's posts elicited affirmative reactions. This highlights the pivotal role of PDAs in efficiently enhancing the process of offering support. Additionally, people who read those threads and view the number of PDAs received can be motivated to do the same.

Empathy

Several posts offered empathy to others who are suffering and facing difficulties caused by depression. Many posters stated that they felt lonely and isolated from the physical world. Online communities can offer them love, a sense of belonging, and empathy, which they may not be receiving from their families or society due to social and cultural factors. For example, expressing

problems or sharing emotions with others can be considered a weakness. (Even when people offer emotional support or love, they may view vulnerability as a sign of weakness). Utilizing nonverbal PDAs can enhance the ability to express empathy and understanding toward others. For example,

this is my first time writing something here. I feel this tightness, like I've lost everything good, and the stress, lack of sleep, and negative thoughts are increasing every day. I've become someone unlikeable, lonely, and depressed. I feel like people planted these traits in me, or maybe I have been like this all along. I feel lost and like I have no support ... The proof of the loneliness I've reached is that I couldn't find anyone to say this to, so I wrote it for strangers. I wished a stranger could understand me (Abdul-Karim, General).

Zyana responded,

I feel you 🧡🥹. (Zyana, General)

Abdul-Karim expressed their struggle through their depression journey and the loneliness they felt. Using online communities helped them to share their feelings and seek the support they needed. Others, such as Zyana, responded to Abdul-Karim by offering support and empathy. Zyana felt Abdul-Karim's loneliness and empathized with him. Using PDAs in this context can help to easily interpret the emotions Zyana felt for Abdul-Karim. Although the emoji used (crying) here can be interpreted as a negative emotion, receiving such an emoji in this context may indicate that users feel or understand the poster's emotions and pain, which can be interpreted as comforting positive feelings.

Unemployment destroys a person in many ways ... I feel hopeless ... I feel like I have no value, and life without a job feels depressing and meaningless. (Reem, General)

Others responded, as shown in Figure 6:



Figure 6. Responses to Reem's post

Reem's depression was partly caused by unemployment. She shared her story with others to express her current feelings and, in response, people used various PDAs to show support. These gestures could be interpreted as empathy and sympathy, offering positive emotional reinforcement. The use of PDAs not only helps the recipient feel supported but can also benefit the sender. By simply selecting an emoji that conveys their emotions, the sender may experience a sense of satisfaction and pleasure from helping others.

Acknowledgment

Various people who posted reassured others with their opinions, which may indicate an understanding of the person's situation:

some people don't know how to talk about their pain. If they want to tell you they're hurting, they bite their nails, turn their face away from you, and embrace silence ... If they sigh, they sigh deeply; if they cry, they cry in silence. When they want to express their feelings, it manifests as a lump in their throat. Do you understand what it means when nothing senses or understands your pain, except the pillow? (Nawal, General)

Nawal posted a common issue, which is that people can hide their depression and try to avoid the situation in the physical world. In Saudi Arabia, some people do not accept depression as a real condition; this may be due to cultural traditions or wrong beliefs. Thus, people hide their depression and pretend that nothing is happening. Online communities offer a free place to access and share stories with people in similar situations. Using various PDAs, many people agreed with what Nawal posted, as indicated in some noting their full acknowledgment.

A further post, by Saafe below, provided advice for others:

good morning. Consistency is the foundation of treatment. In my opinion, the doctor gives you a treatment plan and stays with you throughout the process. That's why it's important to stick with your doctor, and believe me, you will become stronger and a valuable member of society. (Saafe, Self-Development)

Others responded, as shown in Figure 7:



Figure 7. Responses to Saafe's post

Saafe shared his opinions, which were based on his experience and offered a sense of hope while others acknowledged his views. Offering an agreed opinion using emojis as well as the number of people who agree can further encourage users to engage more actively in online communities.

Offering kindness and well-wishing

When members express their isolation or other bad feelings, others often respond with kindness and well wishes as a form of emotional support and include PDAs themselves.

I wish you a happy year in all aspects and better mental health 🍰🎂🎈🎉🎊. (Amal, General)

Amal replied to a poster stating that it was her birthday, and she was lonely, with no one celebrating with her. Other posters replied to her, wishing her a happy year, just like Amal. The types of PDAs used indicated that Amal was very happy, as there was a virtual party with a cake and a balloon suggesting a cause for celebration. These emojis can help with receiving positive emotions and reducing isolation.

In contrast, Naasira expressed she felt exhausted and in pain:

Oh God, I'm tired. (Naasira, General)

For which others offered her kindness and wished her well, as shown in Figure 8:



Figure 8. Responses to Naasira's post.

Using PDAs such as the plaster emoji can be an indicator of wishing for better mental health as a sense of wishing for recovery, and others replied by praying. These affordances enable people with depression in online communities to access, share, and facilitate communications that foster

emotional support with a set of various PDAs, and more can help in engaging in online communities.

Informational support

Many posters used PDAs to reduce ambiguity and facilitate the interpretation of information. Additionally, PDAs can help clarify intentions and perceptions.

Always keep a (shield of protection 🛡️) from people's negative words, whatever the type. We all get affected by words, especially negative ones, which is very normal. But within limits. Don't give anyone the right to hurt you, making you reach a point where you start questioning yourself: 'Should I forgive them or not?' (Sherine, General)

Sherine is an example of a poster who shared strategies for addressing negative thoughts and feelings. Sherine used a picture of a shield to help process the information and make the point clearer, so those who read this post can better understand her meaning, facilitating communication between them. Using PDAs can reduce the potential for misinterpretation and misunderstanding.

Peers of online support groups suggested trying new activities to discover enjoyable experiences that can lift their mood and bring a sense of pleasure.

A New experience, a new feeling ✨🥂.
Advice: Try anything new to your food, places, hobbies, and styles and experience a new feeling. (Malak, General)

Other posters responded using a variety of PDAs, as shown in Figure 9:

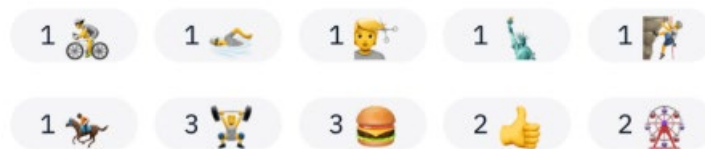


Figure 9. Responses to Malak's post.

Malak initiated a thread and suggested that others try new things and explore their feelings. Some posters responded with emojis representing places or activities they had tried or wanted to try. By viewing the diverse images used in this thread, people may be motivated to try new things, imagining activities and places that can offer them a sense of pleasure and enhance their mood.

*Good morning. I still suffer from sleep disturbances, but despite all of that,
I studied and completed a small section ✓.
I went to the gym ✓.
I prayed in the mosque ✓.
I made my food by myself, and I ate somewhat healthy food ✓.
I'm trying to stay active and live my life, even if I have some difficulties. (Mashal, General)*

Meshal highlighted that he does these daily tasks with a sense of achievement, which could motivate others to do the same. Using a nonverbal symbol offers the poster a sense of accomplishment and relief and, therefore, a better mood, especially the feeling when he tagged the activities. Additionally, such a symbol could have helped receivers with a quick and easy interpretation of the post.

Suicidal thoughts and self-harm attempts + self-criticism + guilt + distress and sadness ... and so much more 🚫. I really wish someone could give me a solution, treatment, or help for these things I'm struggling with. I'm literally exhausted beyond what you can imagine. 🚫 Please help me—my mental health is deteriorating, and my spirit is worn out 🚫. (Rani, General)

Rani expressed that she was seriously contemplating suicide, and she used PDAs to share the need for help. The use of red flags as signs for emergencies helps to direct attention to what has been shared. These alert symbols can add an emotional tone to the text, highlighting the seriousness of the message, which then accelerates replies offering help by sharing the information needed. This suggests that PDAs play an important role in receiving informational support.

PDAs as a harmful tool

Despite the important role of PDAs in receiving emotional and informational support, PDAs can be used to convey frustrating emotions. When users in online communities use negative emojis and add them in a context in which people expect to receive positive feelings, such emotions can be harmful, especially for people with depression. Receiving frustrated emojis can lead to being less active in online communities, which can increase loneliness and isolation.

Peace be upon you (Salaam alaikum). Where have you been? Everyone asked about you. Come back strong and don't let anyone affect you. Is it because of the bone emoji? They will get bored and leave you. Be strong. (Khaled, General)

Khaled posted to Nouf, who had previously started a thread and received a bone emoji, which symbolizes negativity. Nouf was active in the forum, but later, she became less active.

Discussion

This study has highlighted the role of PDAs in offering emotional and informational support while also revealing their potential to cause harm for people with depression in OMHCs. Using posts that include text only or both text and emojis can lead to emotional support (Benson et al., 2020; Mejova & Hommadova Lu, 2022). Encouragement, empathy, acknowledgment, kindness, and well-wishing are forms of emotional support. In OMHCs, people with depression can communicate and understand their emotions and feelings. By offering empathy and encouragement on these platforms, isolation can be reduced. Thus, the feeling of receiving emotional support can enhance engagement in such online communities, a finding consistent with those of previous studies on online health communities (e.g., Liu et al., 2020).

People with depression use PDAs to encourage others, as noted by (Baek et al., 2022; Choi et al., 2023), which are studies in an organizational context. Baek et al. (2022) suggested that brands use emojis to encourage customers to engage more on social media, while Choi et al. (2023) indicated that managers use positive emojis to encourage employees' creativity.

The use of PDAs in OMHCs to express understanding and empathy is similar to the findings of (Benson et al., 2020; Johnson et al., 2020; Mejova & Hommadova Lu, 2022). Benson et al. (2020) investigated the role of online health communities for informal caregivers of patients with cancer in hospice care. The study indicated that using emojis with sad expressions in posts indicates empathy and the disclosure of feelings. Mejova et al. (2022) observed a set of emojis inducing hugs

on Twitter, highlighting that emojis can be used to show care and empathy on social media. Additionally, Johnson et al. (2020) investigated posts with text and emojis on Instagram and stated that they can be interpreted as empathy, a form of emotional support. While these studies are considered important, they did not examine OMHCs.

PDAs can be used in OMHCs to convey acknowledgment as well as offer well-wishes and kindness. Johnson et al (2020) investigated that emojis can be an indicator of well-wishing, a form of positive emotional support. Furthermore, some emojis are used for reassuring (Dos Reis et al., 2016; Smith et al., 2023).

The current study confirmed an important aspect of PDAs, which is that they can foster informational support. Similarly, Barach et al. (2021) outlined how emojis serve multiple functions that enhance reading comprehension. Eye tracking was used to investigate the timing of semantic processing of emojis while reading. The inclusion of an emoji, compared to its absence, led to higher rates of skipping the target word and decreased the total time spent on those words. Additionally, Dos Reis et al. (2016) indicated that, in contrast to text-based communication, incorporating emojis and icons, such as emotional expressions and gestures, improves the quality of information.

Despite the important role of using PDAs in fostering social support, they can be used in a harmful way in OMHCs, as highlighted by Kusaila and Gerhart (2023), who indicated that the use of emojis in an organizational context can create uncertainty and, in certain cases, may result in frustration.

Conclusion

This study provides a perspective on PDAs used in online mental health contexts and is the first study of its kind on the use of OMHCs by people with depression in Saudi Arabia. The findings make several contributions. The study used thematic analysis to investigate the role of PDAs for people with depression in OMHCs and enhances our understanding of how people use these in this context. Second, using PDAs can assist in recognizing emotional and informational support and encouraging people with depression to become more engaged in online communities, which can help foster social support and reduce feelings of isolation.

Additionally, it may be used as a harmful tool, mainly when people receive frustrating emojis. These findings can offer guidance for designing OMHCs for people with depression to maximize the benefits and reduce the risks associated with using OMHCs by enhancing the alignment between the needs of people with depression and the ability of their support networks to address those needs. Future studies can benefit from the research direction that we provided.

Future research could involve conducting interviews with users with depression to investigate and explore the subsequent changes, such as cognitive and emotional ones, after using or receiving PDAs. Additionally, interviewing users with depression can offer their feedback on PDA use, which helps in improving the use of positive PDAs and reducing the negative ones.

This study is not without limitations since it employed qualitative methods, which are not generalizable to a broader population. Furthermore, the study collected posts from Saudi OMHCs but did not investigate the role of PDAs in other countries. However, although the findings may not be generalizable, they may be transferable to people with other mental health conditions using OMHCs and in other countries, for example, in the Middle East. Future studies could verify this and investigate the role of PDAs in other chronic diseases, in different countries, or even on different social media platforms.

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