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A topic modelling analysis of mental health discourse in a social media platform

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ABSTRACT

The proliferation of social media platforms has fundamentally transformed the way individuals interact, communicate and consume information. Online peer-to-peer support groups have become an important resource for individuals facing mental health challenges, offering a digital space for connection, shared experiences, and mutual help. While existing studies primarily focus on the detection of mental health conditions on social media, work on detecting public discussions of support groups remains limited. This study aims to identify the critical themes and concerns discussed by the public regarding mental health on social media, specifically on Facebook. A preliminary dataset of 573 comments was collected from a Malaysian mental health support group on Facebook and analysed. Latent Dirichlet Allocation (LDA) was employed to identify the latent thematic structure of the discussions for topic modelling. The results show that three critical and important themes were discussed: (1) emotional and mental health experiences, (2) seeking advice, and (3) sharing information resources. The findings have implications for mental health professionals, public health campaigns and social media platforms seeking better support and engagement with individuals in need, as well as harnessing the real-world usefulness of online platforms to promote mental well-being.

Keywords: ***Social media analytics, topic modelling, mental health discourse, online peer support, health informatics***

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INTRODUCTION

The global burden of mental health disorders has risen steadily over the past decade. According to the World Health Organization (WHO), an estimated one in four people in developed countries is affected by a mental health disorder (World Health Organization [WHO], 2022). Despite being treatable and preventable, mental health issues are severely hampered by systemic problems, including stigma, which leads to delays in seeking help, low adherence to treatment, inadequate policy support, and inequitable provision of care (Graham et al., 2019; Pavlova & Berkers, 2020).

It is widely acknowledged that creating positive awareness about stigmatized topics such as mental health is not easy (Abu Seman et al., 2020). The increasing reliance on social media as an information source presents both opportunities and threats to this discourse. The internet can foster a safe, anonymous, and supportive space that enables marginalized individuals to express frustration, voice opinions and share knowledge, potentially driving positive cultural change and awareness (Mansoor & Ansari, 2024). However, these online environments also carry a dark side, often intensifying stigma through cyberbullying and hate speech (Bansal et al., 2024).

The widespread adoption of social media platforms, including Facebook, Instagram, and X (formerly Twitter), has fundamentally reshaped how people communicate and consume information (Garg, 2023; Olawade et al., 2023). Online peer-to-peer support groups have emerged in digital communication space, especially around mental health (Pavlova & Berkers, 2020). For example, individuals often use these groups to share personal narratives of their struggles with anxiety or depression and to seek immediate feedback on coping strategies. Consequently, these platforms are now central hubs for community building, information exchange and proactive discussion among those facing mental health challenges (Arias et al., 2022). These spaces often compensate for the limitations of institutional services, including long waiting times, high costs and the stigma associated with mental illness by offering accessible, community-driven avenues for sharing experiences and receiving support.

Among the various social media platforms, Facebook remains one of the most widely used globally and especially in Malaysia, providing numerous public and private mental health support groups where individuals voluntarily share lived experiences, seek emotional support and exchange coping strategies (Kim & Kim, 2026). Facebook enables longer, community-oriented discussions that foster sustained peer support and collective knowledge-sharing compared with platforms such as X, which primarily facilitate brief interactions (Rokicki et al., 2026). Therefore, Facebook support groups provide a rich source of naturally occurring communication data for understanding public discourse surrounding mental health.

However, despite their growing relevance, researchers' attention to these communities remains fragmented and technologically biased. Existing studies predominantly employ machine learning and natural language processing techniques to detect depression, anxiety, suicide risk and other mental health conditions through users' public social media activities, such as tweets, status updates and interaction patterns (Abdul Rahman et al., 2024; Chandrasekaran et al., 2024; Domingo-Espiñeira et al., 2025). While these studies have demonstrated the capability of computational methods to identify psychological risks, they primarily focus on prediction and classification,

rather than on understanding the communication occurring within online mental health communities.

Thus, little attention has been dedicated to examining the naturally occurring discussions in Facebook support groups, where individuals exchange emotional support, negotiate stigma, share coping strategies and construct collective meanings of mental health experiences (Grub, 2025). While studies such as Grub (2025), which examined themes of depression and anxiety on Reddit, and Domingo-Espiñeira et al. (2025), which investigated psychiatric disorder discourse on X, highlight the supportive role of these platforms, the discussion within the mental health support groups themselves is still underexplored. These studies, while methodologically advanced, often reduce complex human expressions of distress and care to quantifiable signals, overlooking the social, emotional, and cultural meanings embedded within community interactions. Consequently, they provide little insight into how individuals collectively construct mental health discourses, negotiate stigma and mobilize support within dedicated online environments (Virani et al., 2024).

This research gap has resulted in a significant lack of systematic understanding of the critical topics and functional themes that define public discourse within these mental health support communities (Garg, 2023; Pruksachatkun et al., 2019). Without systematically identifying the dominant discussion topics, healthcare providers, policymakers and mental health organizations lack empirical evidence regarding the concerns, information needs and support expectations of individuals seeking help through online communities. As a result, communication strategies and digital mental health interventions may not adequately address users' actual experiences and priorities.

To address this limitation, topic modelling offers a powerful unsupervised text mining approach for exploring large volumes of unstructured online discussions. Unlike sentiment analysis and predictive machine learning models that classify users based on predefined categories, topic modelling identifies latent semantic themes that naturally emerge from users' conversations. This enables researchers to gain a comprehensive understanding of the issues, concerns and communication needs expressed within online mental health communities (Couto et al., 2026).

This study therefore aims to identify the main themes and concerns expressed within Malaysian Facebook mental health support groups through topic modelling. Through this analysis, it seeks to uncover the underlying discursive structures that shape collective experiences of mental health in digital spaces, thereby contributing to a more nuanced, and human-centred understanding of online mental health discourse. Such insights are essential for informing public health campaigns, enhancing practitioner engagement with digital communities, and designing responsive support mechanisms that align with the authentic voices and needs of those participating in these online networks.

Understanding the common subjects and functional needs expressed on social media platforms is crucial for effectively leveraging their potential. This study addresses the existing research gap by focusing specifically on the Malaysian context, a setting characterized by unique cultural and societal nuances surrounding mental health. This study makes three important contributions. First, it extends digital mental health communication research by examining naturally occurring discussions within Malaysian Facebook support groups. Second, it applies topic modelling to identify latent discussion

themes beyond conventional predictive analysis. Third, the findings provide practical insights for policymakers, healthcare practitioners, and mental health organizations in designing evidence-based digital communication strategies and community support initiatives.

LITERATURE REVIEW

Social media and mental health

Social media platforms such as Facebook, Instagram, YouTube and X/Twitter have fundamentally transformed human communication and the consumption of information (Roslan et al., 2025). These platforms have reshaped communication practices, enabling individuals to engage in discussions ranging from everyday experiences to sensitive health-related matters (Arias et al., 2022). Numerous studies highlight both the benefits and risks of this shift in mental health contexts (Garg, 2023). Benefits include increased access to peer support, opportunities for self-expression, and reduced feelings of isolation. Conversely, risks include exposure to misinformation, negative social comparison, and cyberbullying (Bansal et al., 2024).

Therefore, social media serves as a powerful, yet complex, mental health resource, particularly by establishing accessible peer-to-peer networks outside traditional clinical settings (Weingott & Parkinson, 2025). More recent studies show that social media has evolved beyond a platform for information sharing into a participatory environment where users actively co-create mental health knowledge, exchange lived experiences and develop peer support networks (Sharma & Sharma, 2026). At the same time, researchers caution that algorithm-driven content exposure and the rapid dissemination of misinformation may amplify psychological distress and reinforce mental health stigma if discussions are not appropriately moderated (Virani et al., 2024).

Online peer-to-peer support groups

The internet's ability to facilitate rapid and widespread social contact has made online communities valuable research environments. These platforms, especially social media, offer rich, longitudinal data with minimal self-reporting bias, enabling researchers to study larger, more diverse populations and observe social behaviour over time (Rueger et al., 2023; Virani et al., 2024). Many online communities focus on specific interests, such as health and wellness, becoming key sources of online peer-to-peer support. A significant development within the social media landscape is the rise of online peer-to-peer mental health support groups (Grub, 2025; Pavlova & Berkers, 2020). These communities provide accessible and often anonymous digital spaces for individuals experiencing challenges to connect, share personal experiences, and offer mutual support.

This function is particularly important in areas with limited access to formal mental health services or where high cultural stigma acts as a barrier to traditional care (Garg, 2023). Recent studies demonstrate that online peer support communities contribute to emotional reassurance, information exchange and empowerment by enabling users to learn from others with similar lived experiences. Unlike formal healthcare services, these communities facilitate common communication, allowing members to both seek and provide support, thereby strengthening collective coping mechanisms and reducing feelings of social isolation (Yuan et al., 2026).

Topic modelling in health communication

Topic modelling has proven valuable for capturing emergent themes during acute events and within specific populations (Ramamoorthy et al., 2024; Yin et al., 2022). As a standard Natural Language Processing (NLP) technique, topic modelling, primarily using Latent Dirichlet Allocation (LDA) or BERTopic is extensively applied in health communication research to automatically uncover latent thematic clusters in large text corpora. Several studies use topic modelling to analyse conversational content within specific mental health contexts, often aiming to understand themes of lived experience or treatment within online forums such as Reddit (Pruksachatkun et al., 2019; Sik et al., 2023). These analyses have successfully identified themes ranging from medical attributions (medication, diagnosis) to social challenges (coping strategies) (Mansoor & Ansari, 2024; Virani et al., 2024).

Recent advances in NLP have expanded the application of topic modelling in health communication research. While LDA remains one of the most widely used probabilistic topic modelling techniques, newer approaches such as BERTopic integrate transformer-based language models to generate more semantically coherent topics (Ramamoorthy et al., 2024). Despite these methodological developments, LDA continues to be widely adopted because its interpretability, computational efficiency and suitability for exploratory analyses of large textual datasets. Compared with sentiment analysis, which primarily measures emotional polarity, topic modelling provides a deeper understanding of large collections of unstructured text (Hankar et al., 2025). Therefore, topic modelling is appropriate for exploring online mental health support groups where discussions are diverse, evolving and not constrained by predefined categories.

Although previous studies have applied topic modelling to examine mental health discussions on platforms such as Reddit, X/Twitter, and YouTube, relatively limited attention has been paid to Facebook-based peer support communities, particularly within the Malaysian context. Existing studies have primarily focused on detecting mental health conditions, analysing public sentiment and examining platform-wide discussions, while the naturally occurring discourse within dedicated peer support groups remains underexplored. Consequently, little is known about the dominant communication themes, community support needs and lived experiences expressed by Malaysian users within Facebook mental health communities.

Therefore, this study extends the existing literature by applying topic modelling to examine naturally occurring discussions within a Malaysian Facebook peer-to-peer mental health support group. The study contributes to digital mental health communication research by identifying latent discussion themes and communication needs, as well as providing evidence to support the design of more responsive community-based mental health interventions.

METHODS

This study adopted a quantitative, content-driven approach employing Natural Language Processing techniques (Pavlova & Berkers, 2020; Sik et al., 2023) because it aims to identify latent discussion themes from a large collection of naturally occurring online conversations rather than examining individual experiences through surveys or

interviews. Unlike traditional qualitative content analysis, topic modelling enables the automatic discovery of hidden thematic structures in unstructured textual data without requiring predefined coding strategies. This approach is suitable for analysing Facebook support group discussions, where users generate large volumes of spontaneous communication reflecting authentic experiences, concerns and support-seeking behaviours (Kim & Kim, 2026; Virani et al., 2024). Topic modelling therefore provides a systematic and objective method for uncovering dominant themes that may not be readily identifiable through manual analysis. The methodology is divided into four main stages: (1) Data Source and Collection, (2) Data Pre-processing, (3) Topic Modelling Implementation using Latent Dirichlet Allocation (LDA), and (4) Topic Modelling Interpretation as illustrated in Figure 1.

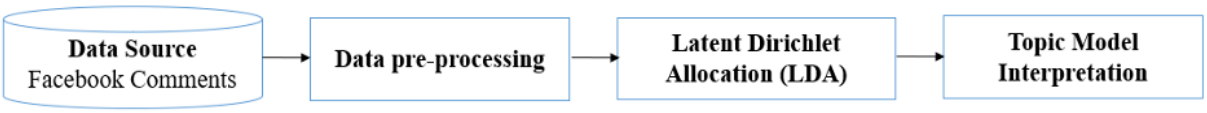


Figure 1. Topic modeling analysis on mental health discourse

Data source and collection

A preliminary dataset was collected from a Malaysian Facebook mental health support group, namely the Malaysia Depression & Anxiety Support Group (MDA). Facebook was selected because it facilitates longer, community-oriented discussions compared with platforms characterised by short textual interactions, such as X (Ramamoorthy et al., 2024). The platform also hosts peer support communities where members voluntarily share lived experiences, as well as emotional concerns and coping strategies, making it an appropriate environment for examining naturally occurring mental health discourse. Facebook was also selected because it remains the most widely used social media platform in Malaysia, making it a central hub for community-based support (Howe, 2024).

The specific group was chosen because it is a large mental health support group for members of the Malaysian public seeking mental health information. Although this Facebook page is private, it has a large and active community that supports the public in discussions about mental health, especially depression and anxiety. Data were collected manually over a specific period, from January 2022 to January 2024, as the Facebook page is private. A total of 573 comments were extracted from the available posts, ensuring compliance with ethical standards for online data research, including anonymization of user identities.

Data preprocessing

Data preprocessing was necessary to reduce linguistic noise and improve the semantic quality of the dataset. Data preprocessing was completed to train the topic model. Several steps were performed on the Facebook comments: (1) language handling, in which the text was translated into English for standardization; (2) tokenization, breaking down the cleaned text individual into words (tokens); (3) stop-word removal, removing common and uninformative words such as “the”, “a”, and “is”; and (4) lemmatization, converting tokens to their base or root form, such as “coping” to “cope” to aggregate word frequencies and improve topic coherence. Standardising the textual data

through translation, tokenisation, stop-word removal and lemmatisation enhances the interpretability of the extracted topics and improves the coherence of the topic modelling results.

Topic modelling technique

This study employed Latent Dirichlet Allocation (LDA) to automatically identify the latent thematic structures in the dataset. LDA is one of the most widely adopted unsupervised topic modelling algorithms for analysing large collections of textual data. This unsupervised learning method assumes that individual posts are mixtures of topics, and that topics are mixtures of words. Compared with manual thematic analysis, LDA provides a systematic, scalable and reproducible approach to identifying hidden semantic structures within large datasets (Domingo-Espiñeira et al., 2025; Grub, 2025). Its ability to automatically uncover discussion themes makes it well suited to exploring online mental health discourse, where conversations are diverse and continuously evolving. Hyperparameter tuning was performed to determine the optimal number of topics (k). The LDA model was trained iteratively across a predefined range of values (k=1 to k=20). The best number of topics was determined by calculating the coherence score for each model, which measures the semantic quality of the clusters. Based on optimal hyperparameter tuning, the number of topics was set at three, corresponding to a coherence score of 0.60.

Topic model interpretation

The final step involved assigning the statistical outputs of the topic model to meaningful and actionable themes. Thematic categorization was performed based on the common function and content of the representative posts and keywords; each topic was assigned a descriptive and meaningful thematic label. Each theme was interpreted by examining its top keywords and reviewing the most representative posts to capture the critical concerns and functional themes within the mental health support group. Human interpretation remains an important step in topic modelling because statistical algorithms generate clusters of words rather than meaningful thematic labels. Therefore, representative keywords and associated posts were carefully reviewed to ensure that each topic accurately reflected the underlying communication context and users expressed concerns.

The methodological approach adopted in this study provides a systematic means of analysing naturally occurring discussions within an online health community. The study moves beyond manual content analysis to reveal latent communication patterns from large volumes of user-generated data by combining Natural Language Processing with topic modelling. This approach contributes to digital health communication research by providing evidence-based insights into the concerns, support needs and communication behaviours of individuals participating in Malaysian online mental health support communities.

FINDINGS AND DISCUSSION

The topic modelling analysis using LDA identified three distinct and coherent topics within the Malaysian Facebook mental health group. These themes collectively map

the landscape of peer-to-peer mental health support, revealing both universal and culturally specific concerns. The LDA model identified three important themes in the dataset: (1) emotional and mental health experiences, (2) seeking advice, and (3) sharing information resources. These themes were defined by their top keywords, and their prevalence was quantified by counting the number of comments assigned to each. The three themes were classified based on the top keywords generated by the model, as shown in Table 1.

Table 1. Themes and top keywords from the LDA model

Topic	Top Keywords (from LDA)	Label Themes
1	Anxiety, stress, alone, tired, sad, feel, difficult	Emotional and mental health experiences
2	Advice, help, doctor, therapy, manage, cope	Seeking advice
3	Share, link, hotline, info, article, resource	Sharing information resources

Table 1 presents the top keywords and themes. The classification indicates that discussions in the Facebook support group were largely focused on three types of engagement: (1) personal experiences of stress, anxiety, and other mental health struggles; (2) requests for advice related to coping strategies, treatment, or professional services; and (3) sharing informational resources, such as hotline numbers, mental health programs and medication information. The distribution of comments for each theme is shown in Figure 2.



Figure 2. Classification of themes in Facebook mental health support group discourse

The analysis of 573 comments identified three primary themes: emotional and mental health experiences, seeking advice and sharing information resources. Figure 2 shows that most conversation within the analysed comments centers on emotional expression and seeking advice. The most prevalent theme is "emotional and mental health experiences", which accounts for the highest number of comments at 224 (36.9%). This suggests the primary function of the online space is peer-to-peer sharing and expression of personal struggles. The second most frequent theme is "seeking advice", with 219 comments (36.08%). This indicates a high level of interactive engagement,

where users actively seek guidance and coping strategies from the community. The least frequent, though still significant, theme is "sharing information resources", with 164 comments (27.02%). This suggests that while providing medical information and external resources is a function of the group, it is secondary to the immediate need for emotional sharing and direct advice-seeking.



Figure 3. Word cloud of frequently occurring keywords

To further illustrate the results, a word cloud was generated to visualize the most frequently occurring keywords across all comments in Figure 3. Larger words represent higher frequency of occurrence. The word cloud reinforces the thematic findings. Based on Figure 3, words such as *anxiety*, *doctor*, *depression*, *family*, *help*, and *stress* appear prominently, highlighting the central role of emotional disclosure and advice-seeking. The presence of terms like *link*, *hotline*, *contact*, and *resource* also reflects the role of information-sharing, though with less frequency compared to emotional and advice-related expressions.

The findings of this study highlight the multifunctional role of online peer-to-peer mental health support groups in Malaysia. The three themes identified reflect the ways in which individuals use social media platforms not only for personal expression, but also for seeking and offering support. The predominance of emotional and mental health experiences suggests that the group primarily functions as a safe outlet for members to disclose personal struggles. This aligns with previous studies which emphasize the therapeutic role of emotional expression in online environments, where anonymity and perceived community support reduce stigma and encourage openness (Garg, 2023; Pavlova & Berkers, 2020). The group provides a non-judgmental space for individuals who may feel embarrassed in offline settings due to cultural or societal stigma surrounding mental health in Malaysia. This suggests that that online mental health discourse should be understood as a dynamic communication process, rather than merely a source of predictive behavioural data.

The strong presence of advice-seeking discussions further highlights the role of social media as a practical support mechanism. Members' active engagement in

seeking guidance on coping strategies, treatment options and access to professional care points to a gap in formal mental health services. This behavioural pattern reflects not only the growing trust in digital communities but also signals persistent gaps in formal mental health service delivery. Structural barriers such as accessibility, affordability, and awareness may limit individuals' willingness or ability to pursue professional help, leading them to rely on peer communities for immediate responses (Domingo-Espiñeira et al., 2025; Sik et al., 2023). This finding reflects the growing importance of digital peer networks as complementary, though not substitutive, resources for mental health support.

The theme of sharing information resources, while less frequent, remains significant. This phenomenon exposes a deeper tension between institutional authority and community-based knowledge production. The migration of advice-seeking behaviour from clinical to social media spaces suggests a reconfiguration of where and how mental health knowledge is legitimized (Arias et al., 2022). The exchange of hotline numbers, medication links, and program announcements indicates that the group also functions as an informal knowledge hub. This finding aligns with existing studies suggesting that the emotional and social dimensions of peer-to-peer support are often prioritized over informational ones (Grub, 2025; Rueger et al., 2023).

In the Malaysian context, where mental health stigma and limited access to care remain challenges, such online peer-to-peer groups provide a valuable alternative space for engagement. Thus, online peer communities do not merely replicate formal support systems, but they create alternative spaces of legitimacy where emotional vulnerability can be expressed without fear of judgment. These digital spaces, though informal, play an increasingly strategic role in expanding the ecosystem of mental health support, serving as both bridges to professional care and buffers against social isolation. Recognizing this dual role is essential for policymakers and practitioners aiming to design integrative mental health strategies that acknowledge and collaborate with these organically formed digital communities, rather than dismissing them as peripheral or unregulated.

Beyond these empirical findings, this study contributes to the field of communication from a theoretical perspective by demonstrating that online peer-to-peer mental health support groups operate as dynamic communication ecosystems, rather than merely information-sharing platforms. The findings show that users engage in emotional disclosure, advice-seeking and collaborative knowledge sharing, illustrating how communication facilitates social support, collective meaning-making, and community resilience within digital environments. Unlike previous computational studies that have primarily focused on detecting mental health conditions or predicting psychological risks (Liu et al., 2025; Nordin et al., 2022), this study shifts the emphasis towards understanding the communicative functions of online interactions. In doing so, it extends the digital health communication literature by highlighting how naturally occurring online discourse reflects users' communication needs, support-seeking behaviours and the co-construction of mental health experiences.

In addition, the findings offer valuable practical insights for mental health practitioners, communication professionals and policymakers. The predominance of emotional disclosure and advice-seeking indicates that digital mental health communication strategies should prioritize empathetic engagement, timely information sharing and community-based support (Weingott & Parkinson, 2025). Government

agencies and healthcare organizations may collaborate with trusted online communities to disseminate reliable mental health information, reduce stigma and encourage appropriate help-seeking behaviours.

Methodologically, this study demonstrates the value of topic modelling as a communication research approach for analysing online discourse. By identifying latent discussion themes in user-generated content, topic modelling complements conventional qualitative content analysis and provides a scalable method for examining large volumes of digital communication, underscoring the increasing importance of computational communication research in understanding complex online interactions.

While this study offers valuable insights into the thematic structure of online discussion in a Malaysian mental health support group, several limitations should be acknowledged. First, the dataset was limited to 573 comments collected manually from a single Facebook group. Although sufficient for preliminary topic modelling, the findings may not fully represent the diversity of mental health conversations across different platforms or demographic segments in Malaysia. Future research should include a larger and more diverse dataset, incorporating multiple online communities to enhance generalizability.

Second, the study focused primarily on textual content and did not consider other modalities such as images, emojis and reaction metrics, which may provide additional layers of meaning in online support groups. Future work could adopt a multimodal approach to capture a more holistic understanding of engagement. Third, the dataset involved manual translation for analysis. Manual translation is prone to interpretation bias and may result in the loss of subtle cultural and emotional nuances expressed in users' comments. Future research should consider employing computational linguistic tools, bilingual NLP models, or professional translation validation to ensure greater accuracy and consistency.

CONCLUSION

This study examined discussions within a Malaysian mental health support group on Facebook and identified three primary themes through topic modelling analysis: emotional and mental health experiences, seeking advice, and sharing information resources. The results highlight that such groups primarily serve as safe spaces for individuals to express their struggles and emotions, while also providing opportunities for advice-seeking and resource sharing. These findings confirm the crucial role of online peer-to-peer platforms in supplementing traditional mental health services, especially in contexts where limited access to professional care and stigma remain significant barriers.

Practical implications are equally significant for mental health practitioners, social media platforms and policymakers. For mental health practitioners and medical experts, insights from online discussions can guide the design of tailored awareness campaigns, resource dissemination and community-based interventions. For social media platforms, the findings emphasize the importance of developing supportive algorithms and moderation strategies that encourage constructive engagement while

reducing harmful discourse. For policymakers, the evidence highlights the value of integrating online peer-support networks into national mental health strategies, ensuring this space is safe, accessible and aligned with public health goals. Finally, online peer-to-peer support groups demonstrate the potential to bridge gaps in care, normalize conversations about mental health and foster community-driven resilience in the digital era.

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