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Research Article

Supportive Conversations: WhatsApp as a Tool for Social Support Among Women Stroke Survivors – A Case Study

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Abstract

Stroke remains one of the leading causes of death globally and one of the primary sources of long-term disability. Beyond the direct impact on physical health, its consequences often extend to survivors' and their caregivers' psychological, emotional, and social well-being. Loss of autonomy, cognitive and emotional changes, and disruptions in interpersonal routines demand complex and ongoing adaptation. In this context, social support plays a crucial role—not only as a complement to formal healthcare but also as a protective factor that promotes rehabilitation, facilitates emotional adjustment and significantly enhances the quality of life. The main objective of this case study was to understand how therapeutic writing (narratives), mediated via WhatsApp, promotes social support in groups of stroke survivors through the sharing of messages within a therapeutic group. Results showed that participation in a WhatsApp group helped to improve emotional support, a sense of belonging, and the construction of a renewed sense of life in the post-stroke period. The group's narratives revealed strong emotional engagement and moments of introspection, with writing and sharing as valuable therapeutic tools that fostered wellbeing, resilience, and peer connection. These findings confirm the potential of hybrid intervention models using WhatsApp to promote group cohesion, emotional regulation, and psychosocial support in recovery and rehabilitation contexts for stroke survivors.

Keywords: Therapeutic Groups; Therapeutic Writing; Mobile Applications; Social Support

Stroke

Strokes remain one of the leading causes of death and the primary cause of disability worldwide [16]. In 2022, stroke remained the leading cause of death in Portugal, with a total of 9,616 deaths recorded among residents. These findings represented 7.7% of all deaths in the country, corresponding to a mortality rate of 92.1 per 100,000 inhabitants [25]. Regarding the Autonomous Region of Madeira (RAM), in Portugal, Europe, approximately 197 deaths due to cerebrovascular diseases were recorded in 2022, 77 of whom were male and the remaining 120 female, with the majority occurring in the municipality of Funchal [12].

Progress in healthcare has enabled a significant improvement in survival rates, allowing an increasing number of individuals to survive [38] and face the challenges of life after stroke.

Experiencing a stroke brings about sudden and significant changes, requiring personal and family adjustments [47,48,54]. As a chronic and debilitating condition, stroke has long-term impacts on the physical, psychological, and emotional wellbeing of survivors [11,13,46,48], compromising autonomy in basic daily activities and hindering active community participation [13]. Among the most common consequences are cognitive changes and difficulties at emotional and communicative levels [13,28], as well as persistent fatigue [1,5,28], alongside psychological comorbidities such as depression [11,36] and anxiety [36]. These difficulties tend to be exacerbated by disrupted routines, the suspension of leisure activities, and increased social isolation, all of which significantly affect emotional wellbeing [46,48].

Survivors who experience depressive symptoms often report feelings of worthlessness [10,36], hopelessness about the future

[36], and the perception of being a burden on those around them [10]. Sadness and loss of interest or pleasure in daily activities are also common, with depression frequently linked to perceived declines in physical or mental capacities—changes that sometimes go unnoticed by those closest to the individual [36]. Additionally, anxiety often focuses on the future, fuelled by difficulties in carrying out basic daily tasks, maintaining social ties, or coping with the fear of another stroke [36].

Another potential consequence faced by stroke survivors is aphasia [4,5], characterised by the loss of language due to brain injury [33]. Post-stroke aphasia may manifest in various forms, ranging from near-complete speech loss to fluent speech with frequent errors [33]. This condition tends to intensify feelings of frustration, fatigue, isolation, and loneliness due to communication barriers and associated physical and sensory deficits [4,5]. In addition to its impact, many survivors feel guilty for being unable to support their family members as they would like, fearing they have become a burden (Baker., *et al*. 2019). Maintaining social support is essential, though it is often compromised by language barriers and the lack of targeted interventions to help preserve relationships [4].

The combination of emotional, cognitive, and physical changes—alongside shifts in family structure and social environment—can profoundly affect how individuals perceive themselves, leading to transformations in personal identity and how they position themselves in relationships [36]. Withdrawal from previously held social roles, communication difficulties, limited mobility, and challenges returning to the workforce affect interpersonal relationships and may culminate in progressive social isolation [36,52]. This isolation is often compounded by social stigma and marginalisation, frequently fuelled by a general lack of understanding about the consequences of neurological injury. Additionally, survivors' socioeconomic status may further hinder their ability to access support networks or resources [36].

Despite these challenges, some factors can serve as protective resources in the recovery and reintegration process. Emotional resilience, adaptability, and perseverance play a significant role in how individuals reorganise their lives [52]. Another protective factor is social support, which may take various forms and originate from multiple sources—such as family, friends, significant others, social networks, religious organisations, or community groups. This support can be practical and emotional, rooted in the perception that help is available and trustworthy [13]. In this regard, the active involvement of these support networks throughout the recovery process is essential to promote rehabilitation and the overall wellbeing of stroke survivors [52].

The impact of stroke is not limited to the survivor; it extends to their families and caregivers, who often endure emotional suffering as they adjust to a new reality [11,47,48]. Sudden changes in daily routines, family dynamics, and social roles can significantly affect interpersonal relationships and professional life, requiring a profound restructuring of day-to-day living. In this process, family members play a central role—not only in providing care [34] but also in promoting rehabilitation and recovery, socialisation, and the overall wellbeing of the stroke survivor [47], underscoring the need for sustained and comprehensive support over time [8].

Assuming this responsibility implies profound changes in the caregiver's personal and family life, often accompanied by high emotional strain [3,46]. The physical and psychological demands of daily care—ranging from constant monitoring to support with the most basic tasks—can result in high levels of stress, anxiety, and exhaustion [34,54]. For many caregivers, this new role requires them to take on responsibilities for which they were not prepared, making the adjustment process particularly challenging [13,38]. The impact goes beyond emotional wellbeing. It also affects other areas, such as physical health, social ties, professional life, financial stability, intimacy, and family relationships [38]. Over time, the quality of life of both caregivers and stroke survivors can deteriorate, particularly when formal support is lacking [22,38]. Thus, understanding the family dynamics of stroke survivors is essential to developing effective interventions that support adaptation to this new reality [54].

Literature suggests that social support is an even stronger predictor of community participation than physical functionality itself. Therefore, rehabilitation professionals should seek innovative ways to foster such participation [13]. It is crucial to make available specific interventions aimed at relieving caregiver burden [13,54] and strengthening social support and re-establishing family balance [54]. To achieve this, healthcare teams must view the survivor-caregiver pair as an interdependent system, providing emotional, practical, and informational support that collectively improves the quality of life of both [34].

The post-stroke recovery process is complex and heavily reliant on rehabilitation interventions [8]. To enhance their practical viability and effectiveness, accessible, low-cost strategies that are

holistic and personalised must be developed [8]. Interventions that promote group support are also recommended, as they foster emotional support and community engagement among survivors [46].

In Portugal, Mutual Help Groups (GAM), promoted by the Portugal AVC Association, are inspired by international initiatives and offer a safe space for stroke survivors, family members, caregivers, and healthcare professionals to share experiences, emotions, and information. These groups aim to reduce social isolation, promote emotional and psychological support, and facilitate adaptation to the limitations resulting from stroke through inclusive peer dialogue (Portugal AVC). Such therapeutic groups provide significant benefits for stroke survivors, enhancing self-esteem, personal growth, and the development of strategies to cope with the physical and emotional challenges posed by the condition. They also strengthen the sense of belonging while raising awareness of the rights and needs of this population. Thus, peer-generated social support is fundamental for psychological adjustment post-stroke [22].

According to Silva., *et al*. [46], support networks are also valuable for caregivers, providing strategies that help them face everyday challenges and share responsibilities. By creating safe spaces for emotional expression and fostering empathy and validation of experiences, these networks play a central role in improving quality of life—especially in resource-constrained contexts [27]. In this sense, support groups may represent an economically sustainable solution to complement formal mental health services for stroke survivors and their caregivers. By offering emotional support, experience-sharing, and practical guidance in a community setting, these groups provide a more accessible and effective response to psychological and social needs while also helping to reduce pressure on conventional healthcare systems [27].

Since caregivers are not the only possible source of support, it is important to work with the survivor to identify other significant individuals who could become part of the support network and participate in interventions [13]. According to the authors, digital (telehealth) interventions should aim to provide direct social support to the person with stroke and encourage connection with other network members beyond the primary caregiver. It is equally crucial that these interventions also consider the caregiver's own wellbeing. Addressing all three dimensions makes it possible to promote more active community participation without increasing caregiver burden or compromising the stability of existing support networks [13].

Therapeutic writing

Writing has been widely recognised as a valuable therapeutic tool, whether used independently or as a complement to psychotherapy [7,23]. The practice allows individuals to reflect on significant life experiences, enabling the free expression of thoughts and emotions without judgment [7]. This approach facilitates emotional regulation and contributes to a greater cognitive organisation of live events, improving interpersonal communication and fostering social integration [7,40] (Benetti and de Oliveira, 2016).

According to the literature, constructing personal narratives can significantly benefit mental and physical health, regardless of age, gender, or cultural background [7,42] (Benetti and de Oliveira, 2016). Transforming emotional experiences into words helps individuals understand and integrate these experiences, enhancing their sense of control and predictability over their own life stories [42]. In this regard, the narrative process emerges as a resource that not only promotes cognitive comprehension but also strengthens social bonds. Sharing emotional experiences—especially intense ones—stimulates the creation of meaningful memories and facilitates cognitive processing [15,41], thereby supporting the maintenance of social relationships—an especially important factor in trauma contexts [41].

Stroke has been conceptualised as an emotionally traumatic event due to its sudden onset, the impact on autonomy, and the associated losses, which often require a long and, at times, irreversible recovery process [23]. For this reason, therapeutic writing may play a central role in post-stroke recovery, both for survivors and their families [23]. The benefits of this practice are linked to the self-reflection it facilitates and the opportunity it provides to share thoughts and emotions in an empathic manner.

Furthermore, writing has shown meaningful benefits in various clinical contexts, particularly when individuals are confronted with emotionally demanding medical experiences [23]. In complicated grief, for instance, it can help individuals construct more coherent and meaningful narratives about their loss, promoting acceptance and the reorganisation of personal identity [45]. For mothers who experience early pregnancy loss, writing can contribute to a less

painful and more adaptive grieving process by allowing them to make sense of the experience [39]. Similarly, in palliative care contexts, this practice benefits patients and healthcare professionals by providing a space for emotional expression, relational strengthening, and improved quality of life [30].

Therefore, Hartke and colleagues [23] argue that this approach can support emotional regulation during the post-stroke period and foster feelings of social connection.

Mobile multimedia applications: WhatsApp

Today, we live in an increasingly digital society marked by technological advancement. Electronic devices have grown significantly, and as a result, mobile multimedia applications such as WhatsApp have become primary tools for connection and communication for many people [44]. Text messaging offers various advantages, including portability, accessibility, ease of use, and the ability to maintain social bonds [43]. This communication format also gives users greater control over how they express themselves, allowing them to manage their time when writing, reviewing, and sending messages—making the communicative experience more comfortable and adapted to their pace [53]. Many users feel more at ease expressing themselves and reflecting on their lives via text messages than face-to-face interactions. Hazelwood [24] highlights that the visual structure of messages—such as paragraph length, frequency of sending, or use of abbreviations—can indicate the sender's emotional or mental state, with changes in this pattern potentially signalling mood shifts. For this reason, many view this form of communication as a more effective and appropriate way to address personal matters. Still, combining text messaging with face-to-face interaction may enhance the benefits of interventions [24].

WhatsApp, launched in 2010 [9], is a real-time communication app offering multiple features such as voice and video calls, image sharing, voice messages, and emojis [26]. It has become particularly popular due to its ease of use and accessibility [9,44,46]. These features have made WhatsApp a widely integrated tool in clinical and healthcare settings, taking on various roles such as supporting rehabilitation, monitoring symptoms, and promoting communication within support groups [9]. According to Silva., *et al*. [46], it facilitates emotional sharing and building of support among members of therapeutic groups. Real-time communication allows participants to express care and attention more frequently and promptly. This continuous interaction dynamic is especially valuable compared to infrequent face-to-face meetings, which—due to their limited frequency—do not allow the same level of closeness or regular follow-up [46].

WhatsApp has proven helpful in encouraging ongoing rehabilitation engagement, particularly in home-based settings [32,46]. According to Mahmood., *et al*. [32], the app allows therapeutic strategies to be adjusted to individual needs, considering factors such as stroke severity, recovery pace, and available support resources. Having professionals available to clarify doubts, monitor progress, and provide regular feedback contributes to participants' greater sense of responsibility and adherence. Additionally, WhatsApp facilitates the sharing of multimedia content (e.g., explanatory videos and audio messages) and enables supervision and group or individual discussion sessions. Ongoing monitoring and positive reinforcement through constructive feedback seem to boost motivation and self-confidence throughout the rehabilitation process [16].

Moreover, WhatsApp is especially effective as a reminder tool. Sending notifications reinforces adherence to proposed activities for stroke survivors and their families, promoting a stronger commitment to rehabilitation goals [32,46]. This functionality helps participants stay focused, aware of their progress, and more engaged in the process. WhatsApp also represents a promising platform to facilitate communication between healthcare professionals and patients, offering educational content in a clear and accessible format [17]. The speed and effectiveness of message exchange make this tool highly valuable for improving adherence and providing continuous support in healthcare contexts [17].

Instant and text messaging is a predominant form of personal interaction, with emojis commonly used to enrich the implied meaning of messages [50,51]. The term "emoji" originates from the Japanese characters e (絵), meaning "image," and moji (文字), meaning "character" [50]. These small pictograms, now integrated into virtually all smartphones, are used across social networks, websites, and mobile applications like WhatsApp, allowing users to quickly and non-verbally express emotions and intentions. They are complements or substitutes for written text [50]. As a communication resource, emojis are integrated into sentences like punctuation marks and expressive tools, facilitating emotional and cognitive expression in an accessible, immediate, and visually appealing way [50,51].

Research shows that the presence of emojis leads recipients to interpret messages primarily as expressions of feelings or personal thoughts (self-disclosure), followed by attempts to influence the receiver, and lastly, as factual information transmission [51]. This interpretive pattern is not fixed—it varies depending on the presence or absence of emojis and the emotional tone of the message, whether positive or negative. The inclusion of emojis tends to shift attention from factual content to a more personal and emotional dimension, making written communication more expressive and closer to face-to-face interaction. In this regard, emojis play a key role in modulating emotional interpretation, functioning as a non-verbal extension of speech [51]. Furthermore, by helping recipients recognise the sender's emotions, emojis make communication more immediate, accessible, and empathetic. This ability to reinforce emotional understanding is especially important in contexts requiring careful attention to emotional wellbeing [51].

However, little is still known about how narrative expression mediated by digital technologies contributes to social support for stroke survivors. Therefore, this study aims to examine how therapeutic writing—conducted through mobile multimedia applications like WhatsApp—promotes social support in therapeutic groups and assess its effectiveness and the perceived benefits among participants. The study focuses on a population of stroke survivors—specifically the participants from the study by Silva., *et al*. [46]—through the analysis of a set of messages exchanged in a WhatsApp group, using the three narrative analysis manuals developed by Óscar Gonçalves [19-21].

Methodology

Sample characterisation and study design

The sample consists of 14 participants: 11 stroke survivors, one physiotherapist, one caregiver, and one relative of a stroke survivor, all of whom were members of a WhatsApp group (Table 1). The participants belonged to a Portuguese community of stroke survivors (Portugal AVC – GAM Alcoitão), which holds monthly meetings in Lisbon, Portugal. The sample is predominantly female, with ten women and four men, and participant ages ranged from 29 to 66 years (M = 53, SD = 11).

Table 1: Sample characteristics by age, gender, and role in the group.

Member ID	Age	Gender	Role
M1	55	F	Healthcare Professional (Physiotherapist)
M2	40	F	Stroke Survivor
M3	29	F	Stroke Survivor
M4	62	F	Caregiver (Wife)
M5	48	F	Stroke Survivor
M6	62	M	Stroke Survivor
M7	53	M	Stroke Survivor
M8	56	F	Stroke Survivor
M9	42	F	Family Member (Daughter)
M10	64	M	Stroke Survivor
M11	66	M	Stroke Survivor
M12	64	F	Stroke Survivor
M13	55	F	Stroke Survivor
M14	50	F	Stroke Survivor

This study, like those by Santos and Soares [45], Paiva., *et al*. [39], and Leal and Soares [30], adopts a qualitative approach centred on narrative analysis. This methodology is particularly suitable for the in-depth exploration of processes, qualities, and the plurality of meanings associated with individuals' subjective experiences within their social contexts [35]. To structure the analysis, the narrative processes present in each excerpt/narrative message were classified according to three key dimensions: content and narrative multiplicity, process and narrative complexity, and narrative structure and coherence [19-21]. The main objective was to understand whether the WhatsApp group fostered increased social support among participants based on the analysis of narrative messages.

Instruments

The narrative messages analyzed were collected from the WhatsApp group that regularly used a tool called "Queijinho". This system consists of a digital form created through Google Forms, where participants would share their emotional state daily using a specially designed scale [46]. Based on the daily responses, a pie chart was automatically generated, with the central circle representing the average colour of the emotional states expressed by all members that day. This average colour was calculated from the individual scores on the emotional scale, thus accurately representing the hue that best reflected the group's collective emotional state [46]. The name "Queijinho" ("Little Cheese") emerged from the participants themselves due to the chart's visual resemblance to a small cheese wheel [46]. This visualisation tool made the group's emotional climate visible, thereby promoting greater collective awareness and facilitating the identification of members experiencing more vulnerable emotional states, allowing for more targeted and empathetic support [46].

The analysis of narrative messages was conducted using the three manuals that guide the assessment across three fundamental dimensions: narrative structure and coherence, process and narrative complexity, and content and narrative multiplicity. The coding process occurred in several stages. Initially, the narrative was read fully to gain a global understanding of its content. During a second reading, it was determined whether the text could be classified as a narrative—temporal criteria being key for this definition. After this verification, each narrative dimension was analyzed and coded using a 5-point Likert scale, ranging from "very little or none" (1) to "very high" (5) [19-21].

The Manual for the Evaluation of Content and Narrative Multiplicity aims to assess the narrative based on its richness and diversity of content. Evaluation is carried out through the rating of four elements: Characters (C), Settings (S), Events (E), and Themes (T) [21]. This manual has shown high inter-rater reliability (94%) and strong internal consistency, with Cronbach's alpha values between 0.86 and 0.91 [18].

The Manual for the Evaluation of Narrative Structure and Coherence aims to assess narrative coherence based on four key parameters: Orientation (O), Structural Sequence (SS), Evaluative Commitment (EC), and Degree of Integration (DI). Orientation contextualises the narrative by integrating personal, cultural, social, and historical factors [19]. A well-developed orientation enables understanding of the plot by answering "Who?", "When?" and "Where?". The structural sequence reflects the organisation of the narrated experience and answers the question, "What happened?". This dimension includes four subcomponents: (1) initial event, (2) internal response to the event, (3) action, and (4) consequences. Evaluative commitment refers to the narrator's emotional tone, reflecting their affective involvement with the narrative. Finally, integration assesses the narrative's coherence [19].

This tool also demonstrates high inter-rater reliability (96%) and strong internal consistency, with Cronbach's alpha values between 0.80 and 0.93 [18].

Finally, the Manual for the Evaluation of Narrative Process and Complexity focuses on analysing four central processes in the narrative: Objectification (Obj), Cognitive Subjectification (CSubj), Emotional Subjectification (ESubj), and Metaphorisation (M) [20]. The first process, Objectification, refers to the complexity of sensory elements in the narrative, including visual, auditory, olfactory, gustatory, and tactile aspects. Cognitive subjectification involves the richness and complexity of cognitive processes, such as thoughts, ideas, and desires. Emotional subjectification refers to the diversity and depth of emotions expressed throughout the narrative. Lastly, metaphorisation relates to the use of metaphors to represent the narrator's lived experience, revealing their reflective and analytical capacity regarding the story told [20].

This manual also presents high inter-rater reliability (89%) and good internal consistency, with Cronbach's alpha values between 0.67 and 0.87 [18].

Analysis procedure

The data analysis was conducted in several sequential stages. Initially, two evaluators with backgrounds in Psychology took part in a training process on narrative assessment. Following this training, from 11 texts messages, 7 were considered narratives possible to analysed according to the guidelines in the manuals on narrative process, content, and structure. The evaluation rules were presented by a psychologist with practical experience in clinical narrative analysis and who had previously conducted studies in the field. This enabled the evaluators to proceed with individualised training. It is important to note that achieving consensus between

evaluators is a central element in this methodology, with particular attention given to resolving discrepancies to ensure reliable and consistent evaluations.

After transcribing the narratives, they were scored based on the predefined parameters. During the sequential analysis phase, evaluators independently reviewed each narrative and assigned scores to each analysed dimension. The evaluators then met to compare results and reach a consensus on all ratings, ensuring that the final assessment was mutually agreed upon. The final scores were analysed using IBM SPSS Statistics software, which allowed for calculating means and standard deviations for the different narrative analysis dimensions.

Results

As shown in Table 2, the Structure dimension presented the highest average scores across all four of its subcategories (M = 3.32, SD = 0.6).

Table 2: Analysis of results across the 3 narrative dimensions (mean and standard deviation).

Categories	Content				Structure				Process			
	C	S	E	T	O	SS	EC	DI	Obj	ESubj	CSubj	M
Mean Scores	1,57	2,14	2,00	2,86	2,71	2,71	4,00	3,86	1,57	3,14	3,14	2,71
Overall Mean (M)	2,14				3,32				2,64			
Standard Deviation (SD)	,51755				,63621				,59261			

Content dimension

The content dimension recorded an average of 2.14 with a standard deviation of 0.51755. Within this dimension, the Themes category had the highest mean score (2.86), suggesting that despite the narratives' formal simplicity, participants explored a variety of concerns, emotions, and experiences relating to group dynamics and life after a stroke. Conversely, Characters scored lowest (1.57), indicating a tendency for narratives to be self-focused, with limited mention of others involved in the experience—possibly reflecting a more introspective writing style.

Structure dimension

The structure had the highest average score among the three dimensions (M = 3.32, SD = 0.63621), reflecting a more complex narrative organisation. Among its subcategories, Degree of Integration received the highest score (3.86), suggesting participants could articulate their stories coherently and sustain narrative continuity. Both Orientation and Structural Sequence had moderate scores (2.71), indicating that while some structure was present, the narratives did not always provide full contextual framing or a clear chronological sequence of events.

Process dimension

This dimension had an average score of 2.64 with a standard deviation of 0.59261. The highest scores were found in Emotional Subjectification and Cognitive Subjectification (both 3.14), implying that participants showed significant personal engagement, expressing both emotional and reflective content related to their group experience. On the other hand, Objectification scored lowest (1.57), indicating a limited presence of sensory elements in the narratives. These findings suggest a predominance of a subjective and emotional writing style.

Discussion of Result

This case study aimed to analyze a set of messages exchanged in a WhatsApp group composed of stroke survivors and other participants. Through this practice of written emotional expression and interaction, it was possible to understand, from a psychological perspective, how group participation contributed to the social support experienced by the participants—providing moments of wellbeing, introspection, emotional sharing, and the construction of new meaning during recovery and rehabilitation.

The analysis drew on the manuals developed by Óscar Gonçalves [19-21], whose methodological framework is based on interpreting narratives across three main dimensions: Structure, Process, and Content. The choice of these manuals is justified by their usefulness in understanding how individuals organise and make sense of their experiences, making them particularly relevant when analysing emotionally challenging situations such as post-stroke recovery.

The Structure dimension recorded the highest average scores across all analysed narratives, suggesting a coherent narrative organisation characterised by a logical sequence of ideas and discursive progression that supports textual continuity [19].

Evaluative Commitment (EC) stood out with the highest values, indicating strong emotional engagement with the experiences narrated by the participants. According to Gonçalves., *et al*. [19], the presence of emotional expressions—through feelings, adjectives, and adverbs—helps build an affective tone that lends authenticity and emotional depth to the narrative. In this study, such engagement manifested in multifaceted ways, combining verbal language with non-verbal elements such as emojis, which complemented written messages, enhanced interpersonal closeness, and reinforced the affective charge of the narratives [50,51]. Sometimes, participants substituted punctuation marks with emojis to compensate for the absence of paralinguistic cues (e.g. intonation, rhythm, facial expression) that are natural in face-to-face interaction [37].

In addition, digital features often found in online contexts—such as exclamation marks and capitalized words (caps lock)—also appeared in the analyzed narratives. According to the literature, these elements enhance the expression of positive emotions, reinforcing feelings such as enthusiasm, surprise, or joy. They add dynamism to written text, bringing it closer to the tone of spoken conversation [37], and act as extensions of emotional language, bringing "life" to the messages [31,37]. Various visual and graphic cues significantly influence the emotional reading of written discourse. For instance, capitalised words serve as attention signals, while multiple exclamation marks—especially in positive messages—intensify perceptions of enthusiasm and authenticity, contributing to more lively and engaging communication [31]. Thus, the visual and affective markers present in digital messages play an important role in shaping meaning and regulating emotional tone, bringing the written experience closer to the dynamics of speech. Within the WhatsApp group, these tools appeared to support more spontaneous, engaging, and emotionally meaningful communication—possibly enabling participants to express themselves more authentically and feel understood and embraced.

The high score in the Degree of Integration—closely following Evaluative Commitment—suggests that this emotional involvement played a significant role in the organization and coherence of participants' narratives, helping to construct more integrated and consistent accounts [19]. This narrative cohesion reflects a sense of belonging to the group, a quality frequently highlighted in shared experiences. As Lamont., *et al*. [29] and Fama., *et al*. [14] noted, this sense of belonging and perceived social support may be crucial in reducing loneliness, boosting self-esteem and resilience, and promoting wellbeing. Despite the challenges of the online format, the data suggest that connection and mutual support remained possible—as long as the environment allowed for authentic interactions and meaningful relationships [29]. In this case, digital mediation did not appear to compromise the interaction quality and proved a promising avenue for facilitating such encounters.

The Process dimension aimed to assess the diversity and complexity with which participants organized their experiences [20]. In this dimension, the narratives were less prominent, presenting the lowest average score among the three analyzed categories (M = 2.64), which may reflect specific features of the communication format used.

Objectification, which refers to the richness of sensory descriptions, including contextual and physical sensations linked to the experience [20], had the lowest score (M = 1.57). Similarly, Metaphorisation—using symbolic constructions to distil and convey meaning, often through metaphors [21]—scored low (M = 2.14). These findings can be understood by looking at the digital tool used. WhatsApp, especially in informal settings like group chats, tends to encourage shorter, more direct, and spontaneous language, more focused on maintaining social bonds and sharing emotions [2] than on detailed or symbolic elaboration. Although this writing style is accessible and relational, it often relies on condensed linguistic forms—such as abbreviations, the absence of formal text openers/closers, and limitations in text length and complexity [2]. As such, facilitating peer connection and emotional sharing may limit the development of more complex narrative components, such as detailed sensory descriptions (Objectification) or symbolic meaning-making (Metaphorisation). Nevertheless, brief instances of metaphors and symbolic imagery were identified, and even these occasional expressions may have contributed to shared meaning within the group, indicating efforts to condense meaning and reinforce group identity.

According to Alazzawie [2], messaging also serves other important functions, such as social organization, information exchange,

interpersonal reinforcement, and maintaining emotional contact between group members—goals that align with the core principles of support groups outlined by Portugal AVC.

On the other hand, among the four categories analyzed in the Process dimension, Emotional Subjectification and Cognitive Subjectification stood out with higher average scores. Emotional subjectification refers to the expression of different affective states experienced by participants, while cognitive subjectification involves the presence of thoughts, ideas, and reflections associated with the narrated experience [20]. The analyzed messages revealed a wide range of emotional content—such as gratitude, joy, affection, and enthusiasm—frequently accompanied by moments of personal reflection. This suggests a significant degree of subjective involvement on the part of the participants.

The narratives showed that the group was perceived as a safe and supportive space, where attentive listening, empathy, and mutual recognition among peers facilitated emotional expression and a strong sense of group cohesion. This emotional sharing has acted as a catalyst for introspection, allowing each member to become more aware of their emotions and assign meaning to them. As noted by Figueiras and Marcelino [15], the verbalization of daily emotions can foster moments of self-reflection and help organize lived experiences cognitively.

Furthermore, signs of emotional adjustment and resilience emerged, with some participants acknowledging that their situation could be worse despite the challenges faced. This ability to reframe experiences is essential in recovery processes, as demonstrated by Kingau., *et al*. [27], who emphasize the role of support groups in fostering wellbeing and promoting resilience among participants. Interestingly, not all members felt comfortable sharing their emotional states through the "Queijinho" tool, fearing the impact it might have on the group. This interpersonal awareness also reflects relational care and a commitment to collective wellbeing.

The analysis suggests that participation in the WhatsApp group became an integrated part of daily routines. This digital space facilitated contact between individuals sharing post-stroke experiences, reinforcing bonds initially formed during the in-person monthly meetings of the GAM. This virtual coexistence has strengthened affective ties and contributed to regular and meaningful emotional support development. Such dynamics echo the conclusions of Hartke., *et al*. [23], who highlighted the therapeutic benefits of group participation in trauma recovery—especially through mutual validation and the generation of new insights into everyday life.

Several participants described the group as a resource that helped soften the impact of the illness. Throughout the analysis, stroke was not solely depicted as a challenging individual experience but as something that became more bearable when shared with peers—consistent with the findings of Harrison., *et al*. [22] and Silva., *et al*. [46]. The group fostered bonds, mutual support, and experience-sharing in this context, functioning as a true therapeutic community.

Writing, together with the "Queijinho" tool [46], seems to have had a therapeutic role by supporting meaning-making and strengthening interpersonal relationships [7,40]. Hartke., *et al*. [23] also defend this idea, highlighting the potential of group narrative writing as a therapeutic tool in post-stroke recovery, enabling participants to reflect on their experiences, feel understood, and share coping strategies with others.

Although the Process dimension did not emerge as the most developed, the results align with the conclusions of Portugal AVC and Kingau., *et al*. [27], who underline the importance of peer support groups in promoting psychological wellbeing and post-stroke resilience, as well as in maintaining and strengthening social relationships. Despite formal limitations, the narratives revealed genuine engagement and a clear effort to make sense of the shared everyday experience.

Regarding the Content dimension, the results revealed a low level of narrative multiplicity. According to Gonçalves., *et al*. [21], a rich narrative in this dimension is characterised by diversity in characters involved, spatial mobility, sequences of events, and the exploration of multiple themes. When this diversity is limited, the narratives become more self-focused, less differentiated, and sometimes marked by a more homogenised perspective on experience [21].

The data suggest that the narratives overall had a particularly low degree of multiplicity and content diversity—especially in the Characters and Events categories. The Characters category refers to figures mentioned or evoked in the narrative who play a

role in the lived or reported experience [21]. Many narratives focus exclusively on the narrator, reflecting a more individual and subjective focus. The Events category, which refers to actions or episodes described in a temporal sequence [19,20], was also sparse or lacking differentiation, with some narratives revolving around a single lived moment. Similarly, the limited variety of Settings—i.e., the spaces where the action takes place [21]—suggests that most events were situated in undifferentiated contexts, such as the WhatsApp group itself, thereby reducing the "symbolic mobility" of the narratives and limiting the richness of the environments evoked.

Despite this contextual simplicity, the Themes category showed greater richness. This category refers to "the global description or elaboration of specific content or multiple facets of a specific content area" [21]. The narratives revealed a rich web of meanings around the group experience, marked by affection and personal growth, where writing and sharing became part of a daily routine—not only as a consolidated habit but also as a commitment to self-knowledge and continuous improvement. By allowing the organization and expression of complex emotions, narrative construction helps relieve emotional burdens, aids in processing difficult experiences and fosters a more coherent understanding of personal journeys [42]. In this sense, expressive writing seems to have played a transformative role, acting as a liberating practice in times of change [6]. Beyond its emotional and relational benefits, expressive writing is also accessible and cost-effective, making it suitable for healthcare settings and vulnerable situations [6,40].

The social dimension of this experience was emphasized through the atmosphere of closeness and support between members, evident in the daily exchanges where humor and empathy helped sustain participants' motivation and wellbeing. Participation in the therapeutic group proved particularly beneficial by offering opportunities to deepen knowledge about stroke and related health topics while encouraging mutual support that extended across emotional, psychological, and social levels. This dynamic was captured in one participant's message: "The WhatsApp group (…) is useful to keep in touch, exchange experiences, and, above all, make friends with people who share the same problem: stroke sequelae (…)".

In addition to aiding psychological adjustment [22], these groups may foster positive personal and social change among participants, responding to the isolation often experienced by survivors and their caregivers [13]. This is further illustrated in the same participant's words: "(…) It not only allows us to reflect on our emotions each day but also to notice when someone else might need support—or simply a kind word".

Frequent communication in the WhatsApp group appeared to reinforce a sense of belonging and created meaningful relationships among participants. These findings align with those of Bermudo-Gallaguet., *et al*. [8], who identified the group dimension as essential—not only for emotional support and shared motivation but also for the value of exchanging experiences and achievements, which reinforce a sense of community [1, 27].

The choice of WhatsApp as the facilitating platform proved significant due to its intuitive and accessible interface [9,44,46]. This platform promotes regular interaction between members [16,46], even between in-person meetings, potentially increasing engagement and sustained participation. The platform's simplicity and accessibility were key to ensuring that all participants could participate continuously and effectively [46].

Throughout the narratives, expressions of recognition and appreciation were frequent among the group members and towards the facilitator. This reflects an environment of gratitude and trust. Positive exchanges, often accompanied by emojis and affectionate language, revealed strong emotional connections between participants, marked by empathy. Despite being aware of the challenges, members approached these moments with a resilient attitude, valuing what they had learned together and strengthening bonds through the process [46].

The analysis was deliberately structured to distinguish the specific processes associated with each of the three dimensions—Structure, Process, and Content—even though these aspects intersect in participants' lived experiences. Applying the manuals by Óscar Gonçalves [19-21] enabled a nuanced interpretation of the narratives and helped uncover key features of the WhatsApp group experience.

These dimensions proved valuable not only for examining the type of social support and sense of wellbeing expressed by participants but also for informing the design of future interventions that are more attuned to the emotional needs of stroke survivors.

In general, the group's daily presence in participants' lives seemed to provide more than just emotional support—it created a space where resilience was built collectively. Stroke ceased to be the central theme and instead became the starting point for strengthening bonds, reinterpreting experiences, and nurturing motivation for recovery and rehabilitation.

The results of this study underscore the importance of investing in hybrid programmes that combine face-to-face and digital interventions to provide stroke survivors with more continuous and accessible support. The complementarity of in-person and online formats fosters a closer and more consistent dynamic [8,46].

This continuous interaction fosters a safe and accessible environment where participants feel more comfortable expressing emotions or difficulties without the pressures that often accompany more demanding face-to-face settings [33]. As such, this platform may support the application of rehabilitation skills to real-life contexts, maintaining engagement and overcoming feelings of isolation. The quality of human relationships, even when mediated by technology, remains essential for wellbeing and personal growth—and such tools can serve as powerful enablers [49].

Limitations and Recommendations

This study presents several noteworthy limitations that should be considered in future research. The small sample size and the brevity of many of the narratives limited the depth of analysis and made it more difficult to thoroughly assess the effects of the WhatsApp group. Moreover, the message format—generally short and spontaneous—may restrict the capacity to elaborate on lived experiences in greater depth, potentially reducing access to richer emotional and reflective content.

Nevertheless, it is recommended that future studies explore the effectiveness of narrative practices at various stages of the post-stroke journey, considering variables such as the time elapsed since the event and the age of participants and ensuring a larger and more diverse sample.

Ethical Approval and Consent to Participate

- Ref. n.º 2/2024 (CE-IST)
- Date: 12/01/2024
- Ethis Commission (EC-IST) – Instituto Superior Técnico – Avenida Rovisco Pais, 1, 1049-001 Lisboa, Portugal comissaoetica@tecnico.ulisboa.pt
- The Ethics Committee of Instituto Superior Técnico (EC-IST) reviewed the application to obtain ethical assessment for the above mentioned project.

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