Research Article
Volume 14:01, 2025

Journal of Nursing & Care

ISSN: 2167-1168 **Open Access**

Investigating the Link between Self-Efficacy and Goal Attainment in Self-management Based Physical Training after Stroke

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Abstract

Background: Incidence of stroke is steadily rising due to our aging population. Self- management has become of increasing importance in stroke over recent years to relive pressure off struggling services the COVID- 19 pandemic exacerbated this issue.

Aim: To explore whether self- efficacy influence's goal attainment in people with stroke in a self- management study.

Hypothesis 1: There is no significant correlation between self- efficacy and goal attainment in people with stroke in the control group.

Hypothesis 2: There is no significant correlation between self- efficacy and goal attainment in people with stroke in the intervention group

Participants: This study was completed on 19 stroke survivors, 7 females and 12 males, the mean age was 67.7 ± 15.2 with ages ranging from 36-87 (51 years).

Procedure: The control group received standard NHS care only post stroke, whereas the intervention group received a self-management programme on top of their NHS care. Completed data collection of Stroke Self Efficacy Questionnaire (SSEQ), General Health Questionnaire (GHQ-12) and Montreal Cognitive Assessment (MoCA) at the 0 and 3-month mark and Goal Attainment Scaling (GAS) at the 3-month mark.

Key results: Significant positive correlation found between GAS and SSEQ in the control group. No significant correlation found between GAS and SSEQ in the intervention group.

Conclusion: Self- efficacy does have a positive influence on goal attainment in people with stroke during their rehabilitation. However, more research is required, with higher numbers of participants to confirm this theory and ensure it is representative of the entire population.

Introduction

Stroke is a condition of sudden onset with the potential for life altering consequences. It has been identified as a leading cause of death in the UK, with cerebrovascular disease being the fourth biggest killer [1]. The most common cause of stroke are ischaemic occlusions which cause a reduction in blood flow to the brain leading to brain cell necrosis [2]. Over 113,000 individuals suffer a stroke each year, incidence has risen by and is set to continue to rise by approximately 60% each year between 2015 and 2035 [3]. A popular theory for the increase in stroke prevalence is our aging population [4,5]. A rise in modifiable stroke risk factors has also been suggested as a reason for the increase, it is likely that a combination of these theories is responsible [6]. This has led to a recent increased pressure on already struggling services [7]. Currently, it is estimated that 1.3 million people in the UK are living with the consequent disability following a stroke [1].The average stroke patient costs the NHS £45,000 in their first year and £25,000 in the following years, leading to an overall cost of approximately £26 billion per year [8].

Rehabilitation post stroke is most effective when delivered intensely; it is currently recommended that a minimum of 45 minutes of each appropriate therapy should be delivered per patient per day [9-11]. Inpatient rehabilitation units are commonly used to deliver the high intensity therapy; they are a step down from hyperacute care and aim to prepare patients for discharge home [12]. Post- discharge, Early Supported Discharge (ESD) teams are used; these can reduce the length of hospital admission and reliance on institutional care long term if the Multidisciplinary Team (MDT) are well coordinated [13].

Community rehabilitation is extremely important post stroke, with rehabilitation at home allowing patients to transfer skills they re-acquired in the inpatient setting back into their typical environment [14]. Effective community rehabilitation also helps to reduce the economic burden on services by reducing the need for lengthy inpatient rehabilitation stays but allows patients to receive rehabilitation in their own homes; many months post stroke [15]. Making this a more cost-effective approach.

Stroke services were disrupted globally during the COVID-19 pandemic. Inpatient Rehabilitation Facilities (IRFs) were overrun with COVID-19 patients requiring rehabilitation or were reassigned as intensive care areas to accommodate for the overwhelming numbers of critically ill patients [16]. Specialist staffs were also redeployed into other areas to relieve pressure meaning that the highest level of rehabilitation could not be delivered [17]. Additionally due to patients fearing COVID-19 transmission the number of people presenting to hospital with mild stroke symptoms was reduced, this meant several patients received no support or rehab post stroke [17]. The pandemic prevented stroke patients from having access to standard inpatient rehabilitation, which indicated an increased need for self- management, where rehabilitation would take place in the patient's own home, focused on their own goals [18].

Self-management is widely used in the management of chronic conditions; the World Health Organisation suggests that self-management exists within a collaborative healthcare setting where multiple areas of input enable patients to take control of their own care [19]. With self-management, patients are encouraged to independently make decisions, solve problems, and commit to plans that work towards specific goals [20]. This has been shown to increase

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Received: 30 December, 2024, Manuscript No. jnc-24-157232; **Editor assigned:** 01 January, 2025, PreQC No. P-157232; **Reviewed:** 13 January, 2025, QC No. Q-157232; **Revised:** 20 January, 2025, Manuscript No. R-157232; **Published:** 27 January, 2025, DOI: 10.37421/2167-1168.2025.14.686

confidence and condition knowledge, and has psychosocial benefits for a patient which aids to reduce the effects of the long- term un- met needs of stroke patients [21].

Self- efficacy and self-motivation are essential components of self-management, with self- efficacy influencing the goals that patients set, their motivation to achieve them and their response to setback [22]. Bandura A. [23] defines self- efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments". There are four different sources of self-efficacy according to Bandura A. [23], these include mastery experience, vicarious experience, verbal persuasion, and physiological states. Self- efficacy can be viewed as one's ability to adopt tailored behaviours in order to achieve goals, a central factor in action planning, influences the amount of effort applied and the level of perseverance one has when in pursuit of a goal [24]. Hence goal- attainment is largely influenced by self-efficacy [25].

Goal setting and consequent attainment plays a vital role in self-management, it is often incorporated into programmes as a way of increasing patient's self-efficacy, encouraging behaviour change and improving overall health [26]. Goal setting theory is important to consider when thinking about self- management and goal attainment, it explores the effectiveness of specific, difficult goals and the impact of self-efficacy on goal setting [27]. It was concluded that specific, difficult goals do increase individual performance, but these can only be attained if the patient is physically able, has goal commitment, receives feedback and has access to all the necessary resources [28]. The above conditions for specific, difficult goals to be set, and eventually attained, require high levels of self- efficacy, making self- efficacy an important factor in goal attainment [28]. The concept of the relationship between goal attainment and self- efficacy has not been widely investigated in stroke. There is currently no study exploring the link between self-efficacy and goal attainment in people with stroke as part of a self-management study, thus creating a gap in the literature.

Aim of the study

To explore whether self-efficacy influences goal attainment in people with stroke in a self-management study.

Objectives

- Analyse the acquired data using statistical tests to explore a link between self-efficacy and goal attainment.

- Consider the other factors contributing to goal attainment and how these may affect participants self- efficacy e.g., cognitive ability and general health questionnaire.

- Make suggestions of the implication for future practice and the need for future research

Hypothesis 1: There is no significant correlation between self- efficacy and goal attainment in people with stroke in the control group.

Hypothesis 2: There is no significant correlation between self- efficacy and goal attainment in people with stroke in the intervention group.

Methodology

The overall design of the larger study involved multiple approaches; a scoping review of the literature surrounding Self-Management (SM) in stroke was completed at the design stage.

This provided foundational knowledge to build the SM program based on the available evidence. The physiotherapists in the local NHS trust and the patient experts were consulted regarding the components of the SM program. Following the production of the SM program, a mixed- methods feasibility study using the sequential explanatory design [29] was carried out to examine the feasibility and acceptability of this intervention for mobility in stroke patients. A mixed- methods approach is appropriate for research particularly in healthcare as it allows for complex subjects to be more deeply understood and for a stronger conclusion to be reached [30]. However, for this dissertation only a subsection of the major study will be detailed below.

In order to address the objectives of this sub study a Randomised Control Trial (RCT) was completed to explore the correlation between self-efficacy and goal attainment in stroke patients as part of a self- management program. This study is a single blind (assessor blind) RCT consisting of two groups, the control group and intervention group. The control group received the standard NHS care only, whereas the intervention group received the self- management program on top of their NHS care. The participants were randomly allocated into their respective groups by a computer-generated randomisation chart [31].

The treatment group received the self-management intervention for mobility training for three months in addition to standard NHS care. The control group received the standard community NHS care only. Both groups received education via a PowerPoint presentation about safe walking.

The self- management intervention included

- Group exercise classes for mobility including peer review within the session.
- Education sessions on improving mobility.
- Home exercise programs
- Self- monitoring using a diary.
- Goal setting
- Action planning

Intervention group

The treatment for the intervention group was delivered over a 12- week period, due to the pandemic this was done over zoom. A qualified therapist was present throughout to support the researcher.The components of the program are justified below:

Goal setting

Goal setting is a vital component of self-management programs, it allows for stroke patients and their families to engage with the rehabilitation team to create person centered treatment goals [32]. In this study a variety of individualized mobility goals were set for each participant based on their baseline assessment. Individually, or with help from a family member, the participant completed the goal- setting document. The goals in the document were then reviewed every two weeks by the participant with input from the researcher.

Action planning

Once appropriate goals had been set, the participants negotiated training programs to achieve the goals. Exercises were chosen to meet the goals from a handout with exercises at various levels of difficulty.

Group exercise classes

Exercise in a social environment (as part of a group) has been shown to significantly increase self- efficacy in older individuals participating in exercise, more so than individual exercise [33]. Therefore, group exercise classes were included in the self- management program as a way of increasing self- efficacy in the participants.

Home exercise programs

Low self- efficacy has been identified as a barrier to patients completing home exercise programmes consistently and effectively [34]. Therefore, increasing self- efficacy through group exercise had a positive influence on completion of their individualised HEPs at home.

Data collection

Demographic data was collected at the initial assessment, for example, participant name, date of birth, gender, diagnosis, and GP. Self- reported data on the goal setting documents, recording diary and usual care record were completed by the participant and collected by the researcher. Data was

initially completed on paper copies and then transferred to electronic files at the University by research team members.

In order to study the influence of self-efficacy and related factors on attainment of goals data collection involved psycho-social testing including Montreal Cognitive Assessment (MoCA), Stroke Self-Efficacy Questionnaire (SSEQ), General Health Questionnaire (GHQ-12) and Goal Attainment Scaling (GAS). MoCA has been proven to be more sensitive at detecting cognitive impairment post-acute stroke than the Mini Mental State Examination (MMSE) [35] consequently MoCA was used to assess the participants cognitive ability. The stroke self-efficacy questionnaire has been shown to be a valid method of assessing patient's confidence in their ability to perform functional tasks and self- manage their condition [36]. Therefore, this was the main method of assessing patient's self-efficacy throughout the study. GAS was used to the monitor goal attainment of the participants; goals were set at the initial consultation and then reviewed using GAS at the 3-month mark [37]. GAS has been found to have the strongest evidence of reliability of any individualised outcome measure relating to goal attainment, including Canadian Occupational Performance Measure (COPM) [38]. Therefore, GAS was used to monitor goal attainment throughout the study.

The research team carried out the assessments of SSEQ, MoCA and GHQ-12 at the beginning of the study to establish a baseline (0 months) and then at 3 months to monitor progress.

Eligibility criteria

The participants were people who, following a stroke, were discharged from acute hospitals in the West Midlands (UK) to continue their rehabilitation from their homes most with input from their local community team. To increase the chance of recruitment, stroke survivors were recruited from several different community rehabilitation teams.

Inclusion criteria

Individuals were eligible to participate in the study if they:

- Were adults (18-99)
- Had a diagnosed first stroke.
- Were within the first 6 months post- discharge from hospital.
- With Functional Ambulation Category (FAC) ≥ 2 meaning that the participant can mobilise with a maximum of one person assistance with or without a walking aid [39].
- Have a level cognitive ability that allows the participant to communicate effectively and consent to participate in the study. The Montreal Cognitive Assessment (MoCA) will be used for screening [40].
- Can understand English.
- Have access to a suitable device that can launch Zoom.

Exclusion criteria

Patients were excluded if they

- Were unable to participate or give consent to participate in the program due to marked cognitive impairment.
- Suffered from severe cardiopulmonary diseases or severe arthritis or have other major co-morbidities that may out them at risk when exercising in the community.
- Had severe aphasia.
- Had severe spasticity or fatigue post stroke.

Ethics

The researcher gained informed consent from the participants by giving them study information sheets in person. The researchers taking consent had undergone the good clinical practice training given by the NIHR for research in 2019. The participants were each told they could withdraw from the study at any moment without reason, their anonymised data would still be analysed but no further data would be collected. The study was approved by the NHS research ethics committee through IRAS (project ID: 269079), data collection began after this approval following the ethical guidelines set out.

Statistical analysis

All data analysis was performed using the Statistical Package for Social Sciences (SPSS) app. A Shapiro Wilk test was performed on each group to check whether the data was normally distributed ($p>0.05$) [41]. On the normally distributed data a two tailed Pearson's correlation coefficient was performed to test correlation between GAS and SSEQ, GAS and MoCA and GAS and GHQ-12 [42]. On the data that was found to not be normally distributed a Spearman's test for correlation was performed [43]. Several paired sample t-tests were completed to determine whether there was a significant difference between the data at 0 and 3 months within each group [44]. The significance level was set at a priori of $p<0.05$ for this parametric test [45]. This was done to determine whether the self- management programme in the intervention group had a significant effect on the outcome measures over the 3-month period. On the other hand, the paired sample T- tests were performed to determine whether the lack of self- management input in the control group significantly affected the outcome measures.

Results

Participants

The study began with 19 participants, 7 females and 12 males, the mean age was 67.7 ± 15.2 with ages ranging from 36-87 (51 years).

One patient withdrew due to hospitalisation, one patient withdrew due to a broken bone and one patient voluntarily withdrew. The data of all the patients who withdrew from the study was used in analysis at 0 months but due to them withdrawing before the data collection at the end of the study they were not included in the 3-month analysis. Therefore, the remaining 16 participants' data was analysed at the 3- month mark.

Descriptive statistics

Table 1 shows the mean and Standard Deviation (SD) for the descriptive statistics of the patient population and the pre and post intervention differences. The significant results are shown in bold. There was a significant increase in SSEQ found in the intervention group over the 3-month period; this indicates that the self- management program successfully raised the self- efficacy of patients. There was also a significant decrease found in GHQ-12 in the control group over the 3 months.

Inferential statistics

Table 2 shows the Shapiro- Wilk tests and consequent correlation tests for GAS and SSEQ, GAS and GHQ- 12 and GAS and MoCA for both the control and intervention groups. The significant results are shown in bold. The data for GAS in the control group was not normally distributed, however, all the other data sets were. There was a significant, positive correlation found between GAS and SSEQ in the control group, this indicates a significant relationship between self- efficacy and goal attainment in this group. There was also a significant, negative correlation found between GAS and GHQ-12 in the control group.

However, there was no significant correlation found between GAS and SSEQ or GAS and GHQ-12 in the intervention group. This highlights no significant relationship between self- efficacy and goal attainment in this group. Additionally, there was no significant correlation found between GAS and MoCA in either the control or intervention group, suggesting that MoCA does not have a significant influence on goal attainment.

The above chapter displays the key results of the sub- study, these being a significant positive correlation between SSEQ and GAS and a significant negative correlation between GHQ-12 and GAS in the control group. However, there was no significant correlation found between GAS and GHQ or GAS and SSEQ in the intervention group and no significant correlation found between

Table 1. Mean and Standard Deviation (SD) for the descriptive statistics of the patient population and the pre and post intervention differences.

	Control Group			Intervention Group		
	Mean and SD		Pre and post differences	Mean and SD		Pre and post differences
	0 months	3 months		0 months	3 months	
Age	72.4 ± 13.6	N/A	N/A	62.6 ± 15.9	N/A	N/A
SSEQ	88.9 ± 19.6	97.4 ± 18.1	0.38	84.8 ± 16.8	104 ± 12.5	0.033
GHQ- 12	18.8 ± 7.27	13.6 ± 6.48	0.016	15.9 ± 6.57	12.9 ± 6.62	0.294
MoCA	23.2 ± 2.55	22.8 ± 3.60	0.505	22.8 ± 6.00	22.3 ± 6.02	0.569
GAS	N/A	51.8 ± 12.9	N/A	N/A	52.2 ± 13.9	N/A

Table 2. Shapiro- Wilk tests and consequent correlation tests for GAS and SSEQ, GAS and GHQ- 12 and GAS and MoCA for both the control and intervention groups.

	Control Group		Intervention Group	
	Shapiro- Wilk Test	Spearman's Test for Correlation	Shapiro- Wilk Test	Pearson's Test for Correlation
GAS- 3 months	0.016 (not normally distributed)	N/A	0.423 (normally distributed)	N/A
SSEQ- 3 months	0.339	GAS *vs.* SSEQ=0.007	0.065	GAS *vs.* SSEQ=0.220
GHQ-12- 3 months	0.98	GAS *vs.* GHQ- 12=0.023	0.197	GAS *vs.* GHQ-12=0.595
MoCA-3 months	0.723	GAS *vs.* MoCA=0.129	0.423	GAS *vs.* MoCA=0.442

GAS and MoCA in either the control or intervention group.

Discussion

Since the COVID- 19 pandemic there has been an increased need for self-management in stroke rehabilitation, both to relieve pressure off overwhelmed services and to ensure that each patient has the opportunity to reach their full rehabilitation potential [46]. Self- efficacy and goal attainment are large components of the concept of self- management. Consequently, it is important that we understand the relationship between self-efficacy and goal attainment to ensure that self- management programmes are effectively facilitating patients to achieve their rehabilitation goals. Therefore, the aim of this study was to explore whether self- efficacy influence's goal attainment in people with stroke as part of a stroke self- management study. The objectives of the study included statistical analysis of acquired data, exploring the relationship between GAS and other potentially influential factors such as MoCA and GHQ-12 and making suggestions around clinical implications and the

requirement for future research. The aim and objectives of the study have been addressed throughout the thesis. The principal finding of this study was that self- efficacy does have a positive influence on goal attainment in stroke rehabilitation, there are additional findings involving the other influential factors which will be explored in the below chapter.

There was a significant, positive correlation found between Goal Attainment Scaling and Stroke Self Efficacy Questionnaire in the control group (Figure 1). This is well supported by Bandura A. [23] who's psychosocial theory states that self- efficacy largely influences goal attainment due to self- efficacy determining the effort, planning and perseverance one has in pursuit of a goal. The significant positive correlation found between GAS and SSEQ corresponds with Brockk , et al. [47]who found a significant positive correlation between goal attainment and self- efficacy in stroke survivors six months post discharge from an inpatient rehabilitation facility. This research may have had a similar finding to our study because both were completed in the community during the non- acute stages of stroke, and the age of the participants was within a similar range for both studies. With both of these factors having an influence on goal setting and consequent attainment, it is important to consider them as being influential in producing the similar results [37]. Interestingly, Brock K, et al. [47] also found that there was no significant correlation between self- efficacy and goal attainment when it was measured before discharge from the inpatient rehabilitation facility. In the community the intensity of physiotherapy is much less than that of inpatient rehabilitation, treatment may reduce from 45 minutes daily to twice weekly sessions or less [48]. This finding suggests that self- efficacy has a more significant influence on goal attainment in the later stages of stroke rehabilitation when the patient is in the community, setting more personal goals and is under less intense supervision from physiotherapy services. This can be explained by Lee TW, et al. [49]who's theory states that self- efficacy plays a more significant role in the attainment of personal goals rather than lower, more generic goals that would be set as an inpatient. Therefore, it can be accepted that self- efficacy plays more of a roll in stroke rehabilitation in the later stages when patients are in their home environment setting goals that are more important to them. With a positive correlation having been found between self- efficacy and goal attainment in the control group and this being suitably supported by literature and psychosocial theory, hypothesis 1 can be rejected.

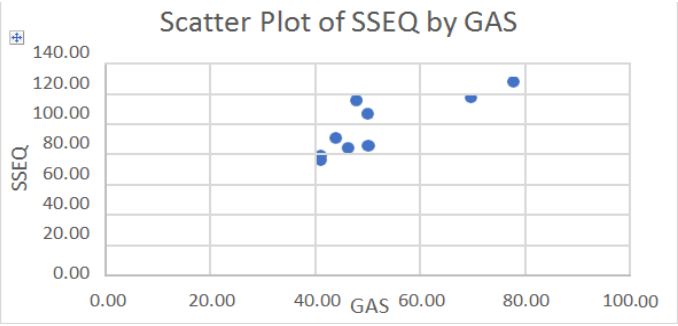

Figure 1. Shows the significant, positive correlation between GAS and SSEQ in the control group.

Having analysed data from the intervention group, there was no significant correlation found between Stroke Self-efficacy Questionnaire and Goal Attainment Scaling. Over the course of the three-month intervention period, the self- efficacy of the participants increased significantly due to the self- management plan incorporating strategies to facilitate their self-efficacy. However, this was not reflected significantly in the GAS scores of the participants, with no significant correlation being detected between SSEQ and GAS (Figure 2). This could be due to GAS being based off subjective scoring, and the intervals of scoring not being described precisely enough for participants to choose the most appropriate boundary to reflect their progress [50]. Our finding contradicts that of Nott M, et al. [22]who found that the increase in self- efficacy over the course of a self- management programme in people

with stroke, caused significantly higher Canadian Occupational Performance Measure (COPM) scores. Therefore, highlighting a positive relationship between the self- efficacy gained from self- management programmes and goal attainment. The difference in findings could be due to the difference in outcome measure used between our study and the study done by Nott M, et al [22], GAS was used to evaluate goal attainment in our study whereas COPM was used in their study. The differences between COPM and GAS are not clear, however, COPM is often seen as the most subjective of the two measures. Therefore, GAS is viewed as the most reliable tool of the pair in measuring goal attainment [51]. This could suggest that the finding of our study is more reliable than that of Nott M, et al [22]due to the use of GAS over COPM.

In spite of this, the other potential influencing factors that could have led to the difference in findings must be considered. The other main variance between studies is the difference in sample size, our study analysed 7 participants' data in the intervention group whereas Nott M,et al [22] analysed 40 participants' data. With higher sample sizes having higher chance of the results being a more accurate representation of the concept being explored, it is likely that the finding from Nott M, et al [22]is more reliable. When returning to consider the psychosocial theory around this topic, it has been previously established that there is a positive relationship between self- efficacy and goal attainment [23]. This further supports the findings of Nott M, et al. [22] indicating that their finding of a positive correlation between self- efficacy and goal attainment is

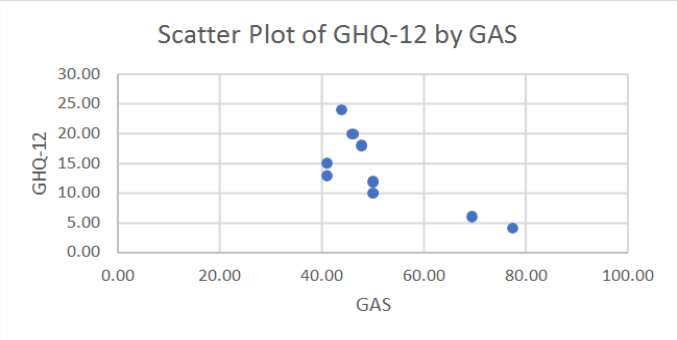

Figure 2. Shows the significant, negative correlation between GHQ-12 and GAS in the control group.

more reliable than our finding of no significant correlation between the two concepts.

Although there was no significant positive correlation between GAS and self- efficacy in the intervention group, having analysed the scatter plot of GAS by SSEQ (Figure 3) there is an upward trend, indicating a positive correlation between the two concepts. It is believed that sample sizes upwards of approximately 250 are the most accurate at producing stable correlations [52]. With our sample size being significantly lower than this, it is unlikely that this correlation would have statistical power even if it was of significance. Due to no significant correlation being found between self- efficacy and goal attainment in the intervention group, hypothesis 2 must be accepted. However, if more research, with a larger sample size, was to be done in this area it is likely that it would confirm a significant positive correlation between goal attainment and self- efficacy. This indicates the need for further research in this area to explore the relationship between self- efficacy and goal attainment within a self- management study on a wider scale.

Having completed data analysis on data from the control group, there was a significant negative correlation found between General Health Questionnaire and Goal Attainment Scaling. With higher scores in GHQ-12 indicating a worse general health state, this finding indicates that as GHQ-12 score decreases, general health improves, and GAS increases. The relationship between goal attainment and GHQ specifically has not been widely investigated in stroke, thus making it difficult to make comparisons between pre-existing literature.

However, Fisher K and HardieR [53]found a significant negative correlation between GHQ and GAS in people with chronic pain which corresponds with the findings of our study.

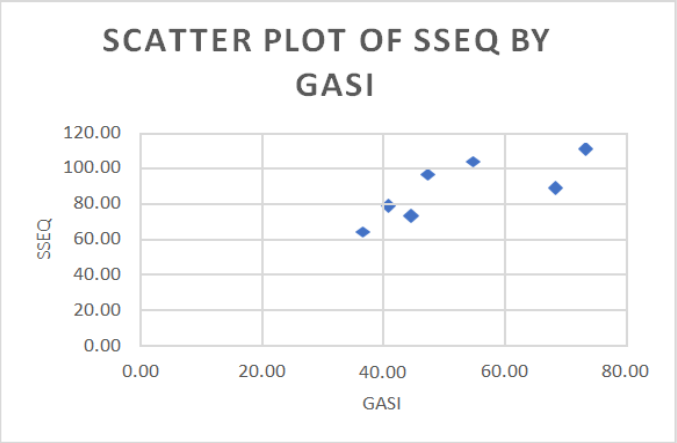

Figure 3. Shows the non- significant, positive correlation between GAS and SSEQ in the intervention group.

There are some differences between the two studies, the main one being the difference in sample size with Fisher K and Hardie R [53] using 149 patients with chronic back pain and our study using 9 patients with stroke. With our study having such a low sample size the statistical power is low, therefore there is a risk that the statistically significant results found are not a true reflection of the concept being explored [54]. However, the correlation found between GHQ-12 and GAS by Fisher K and Hardie R [53] is more reliable due to them having a much higher sample size and consequent higher statistical power, thus providing support for the findings of our study. The negative correlation between GAS and GHQ-12 is supported by the Social Cognitive Theory, this theory emphasises the importance of motivation in human behaviour as it plays a large role in the development of agency to be able to take control of concepts in life such as goals [55]. Part of the GHQ-12 assesses depression and anxiety, patients with a high GHQ-12 score are more likely to have symptoms of depression [56]. Patients with depressive symptoms are far more likely to experience low levels of motivation and consequent low self- efficacy than those without [57]. Therefore, patients with high GHQ-12 scores are less likely to achieve their goals due to their lacking motivation, resulting in lower GAS scores. This conversely means that patients with a low GHQ-12 score are more likely to have high motivation and consequently have high GAS, resulting in a negative correlation between GAS and GHQ-12.

There was no significant correlation found between Montreal Cognitive Assessment and Goal Attainment Scaling in neither the control nor the intervention group. This could be due to the exclusion criteria; patients with a marked cognitive impairment were not eligible to participate in the study. Therefore, the participant population had adequate levels of cognition to provide consent and communicate effectively and this was consistent for each participant. Jung Y, et al. [58] found that stroke patients with Mini Mental State Examination (MMSE) score of >20 had a significantly higher GAS score than the patients with MMSE score <20. This suggests that cognition does have an effect on goal attainment, particularly in patients with severe impairment. Jung Y, et al. [58] used MMSE in their study to evaluate their participant's cognition, whereas MoCA was used in our study. This is because MoCA has been proven to be more accurate in detecting cognitive impairment in stroke survivors due to its higher sensitivity in comparison to MMSE [59]. This difference in outcome measure could be a cause of the difference in findings between Jung Y, et al [58] and our study. However, it is more likely that the exclusion criterion was the main cause of the difference in findings. People with a marked cognitive impairment are more likely to struggle with implementation intention, meaning they often find it difficult to physically carry out the steps required to achieve a goal [60]. This frequently has a negative effect on goal attainment, as highlighted in the study completed by Jung Y, et al [58]. With no participants with marked cognitive impairment being included in our study, this relationship was not identified. Developing a cognitive impairment post stroke is very common particularly with a left sided lesion, therefore by excluding these participants from the study a large proportion of the patient population is not represented [61]. From the findings of our study and the study done by Jung Y,et al [58] we can conclude that in patients without a severe cognitive impairment, their

level of cognition does not influence goal attainment. However, for those with a marked cognitive impairment, goal attainment is negatively impacted.

Goal attainment itself positively influences quality of life in people with stroke by promoting and maintaining health [3]. Therefore, there is justified reason for continued use of goal setting in stroke rehabilitation particularly within self- management programmes as a tool for facilitating self- efficacy.

Limitations

There are many strengths to this study which increased the reliability of its results. The allocation of groups in this study was done randomly via a computer-generated system, this reduced the risk of allocation bias [62]. Additionally, the study was assessor blind, meaning the assessor wasn't aware which group the participant was in whilst completing the assessment, which reduced the risk of performance bias [63]. Reducing bias in these two areas significantly increased the validity of the results of this study [64]. However, this was originally a very small study, then three people withdrew for medical and personal reasons which reduced the sample size further. Additionally, due to the exclusion criteria, this study did not contain any participants with significant cognitive impairment or aphasia. It is estimated that a third of stroke survivors struggle with aphasia in the first 6 months post stroke [65].

Moreover, cognitive impairment both pre- stroke and post- stroke is very common and there has been a significant link established between stroke and the development of dementi [66]. Excluding these two patient groups eliminated a large proportion of the stroke survivor population. Therefore, this study may not accurately represent the target audience. This indicates the need for more research to be done into this area with higher numbers of participants to confirm the results found in this sub study.

Clinical Implications

Including strategies that increase self- efficacy into stroke rehabilitation programmes, particularly post discharge from an inpatient facility, should have a positive influence on goal attainment in people with stroke who do not have any cognitive impairments or aphasia.

Incorporating activities such as group exercise, encouraging self-monitoring through the use of a diary and facilitating task mastery are all ways in which to aid the increase in self- efficacy. However, more research needs to be completed in this area with stroke survivors with cognitive impairments and aphasia to establish whether the positive influence of self- efficacy on goal attainment is consistent with the entire stroke population.

Conclusion

This study was completed due to the increased need for self- management programmes in stroke. Allowing stroke survivors to have more control over their own rehabilitation should help to relieve pressure off struggling NHS services. To make these programmes as efficient as possible we must understand the relationship between two large components of self- management: self- efficacy and goal attainment. There was a significant correlation found between SSEQ and GAS in the control group, this was well supported by the literature and psychosocial theories. Therefore, hypothesis 1 can be rejected. However, despite there being a positive trend, there was no significant correlation found between SSEQ and GAS in the intervention group, therefore hypothesis 2 must be accepted. This study has found that self- efficacy does positively influence goal attainment in people with stroke during their rehabilitation, however, further research needs to be done to confirm this theory and to ensure it is representative of the entire stroke patient population.

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How to cite this article: Sahely, Ahmad, Maisie Saul and Sheeba Rosewilliam. "Investigating the Link between Self-Efficacy and Goal Attainment in Self-management Based Physical Training after Stroke." *J Nurs Care* 14 (2025): 686.