Arab American University

Faculty of Graduate Studies

Department of Administrative and Financial Sciences

Master Program in Quality Management in Health Institutions

From Patient Reports to Recovery Pathways: Stroke Care Outcomes in Palestinian Hospitals

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202020306

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This Thesis Was Submitted in Partial Fulfilment of the Requirements for the Master Degree in Quality Management in Health Institutions

Palestine, July/2025

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Thesis Approval

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Declaration

I declare that, except where explicit reference is made to the contribution of others, this thesis is substantially my own work and has not been submitted for any other degree at the Arab American University or any other institution.

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Dedication

I dedicate this work to Allah, my family, my friends and to my country, Palestine

Baraah Salah Saleh Hamayel

Acknowledgments

I would like to express my sincere gratitude to Dr. Shahenaz Najjar, my supervisor and personal role model, for her guidance, constant encouragement, patience and insightful criticism. This dissertation was greatly influenced by her exceptional commitment to academic achievement and attention to details.

I would like to thank the Arab American University and Department of Administrative and financial sciences for giving me the resources and opportunities I needed to complete this dissertation.

I am greatly indebted to my parents and family for their endless encouragement, help and support. Thank you for always believing in me

To my partner, Baha, thank you for your patience, understanding, encouragement, and support.

To my angels, my children Tia and Reman, you have been my inspiration and my challenge. I hope my achievement inspires you to never give up and always pursue your dreams

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Abstract

Background
Although stroke is a major health burden globally and accounts for 11% of deaths in Palestine, making it the second leading cause of mortality, little is known about how stroke survivors in Palestine perceive their recovery using Patient-Reported Outcome Measures (PROMs).
Objectives
To assess the relationships between three key dimensions of patient reported outcome measures and patient demographic, stroke type, length of stay, ability to perform social roles, perception of overall health and rehospitalization among stroke patients in Palestinian hospitals.
Methods
A cross-sectional approach was adopted across 12 public hospitals in the West Bank. 100 stroke patients admitted 90 days prior to data collection period were recruited using convenient sampling. The data collection took place between June and September 2024.The questionnaire encompasses questions from three validated tools: ROMIS-10, the ICHOM Standard Set for Stroke and RIKSSTROKE. Data were gathered by medical record review and interviewer-administered questionnaire. Analysis was done in R using descriptive statistics, non-parametric tests (Mann–Whitney U, Kruskal–Wallis, Kendall's rank correlation), and sample-specific T-score standardization.
Result
The study found a significant difference between mental and physical health outcomes and no significant difference in patient satisfaction between non-re-hospitalized patients (Mdn = 51.8, Q1–Q3 = 45.0–56.0) and re-hospitalized patients (Mdn = 51.8, Q1–Q3 = 45.0–52.6), W = 1200.5, p = .134. However, non-hospitalized patients reported better physical and mental outcomes. Significant associations were evident in other factors such as number of re-admissions, age, gender, level of education, level of income, and type of stroke, perception of overall health and social activity ability.
Conclusion
The findings support a holistic, patient-centred model of stroke care in Palestine. Mental and physical health outcomes are bidirectionally linked, and factors such as rehospitalization, female gender, older age, and low socioeconomic status predict poorer recovery. These results underscore the need for integrated, individualized stroke rehabilitation strategies tailored to patient-reported needs.

Key words: Stroke, Patient-Reported Outcome Measures (PROMs), Physical Health, Mental Health, Rehospitalization

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List of Definitions of Abbreviations

CAT: Computerized Adaptive Testing

CTT: Classical Time Theory

DALYs: Disability-Adjusted Life-Years

EBM: Evidence-Based Medicine

ED: Emergency Department

EQ-5D-5L: EuroQol-5 Dimension with Five Levels

GBD: The Global Burden of Diseases

HADS: Anxiety and Depression Scale

HICs: High Income Countries

HRQoL: Health-Related Quality of Life

ICD-10: International Classification of Diseases, Tenth Revision

ICHOM: International Consortium for Health Outcomes Measurement

IQR: Interquartile Ranges

IRT: Item Response Theory

MDN: median

MENA: Middle East and North Africa

MoH: Ministry of Health

mRS: Modified Rankin Scale

NGOs: Non-Governmental Organizations

NIHSS: National Institute of Health Stroke Scale

OHS: Overall Health Status

PROMs: Patient-Reported Outcome Measures

PROMIS: Patient-Reported Outcomes Measurement Information System

PSD: Post-Stroke Depression

QoL: Quality of Life

SASC: Satisfaction-With-Stroke-Care

SASC-19: Satisfaction with Stroke Care Questionnaire

SIS: Stroke Impact Scale

SRC: Socio-Rehabilitation Centre

SS-QOL-12: Short Stroke Specific Quality of Life Scale

TIA: Transient Ischemic Attack

UNRWA: United Nations Relief and Works Agency for Palestine Refugees in the Near East

VBM: Values-Based Medicine

Chapter One: Introduction

1.1 Background

Stroke is among the leading causes of death worldwide. In 2021, there were 7.44 million deaths worldwide due to strokes (Martin et al., 2024). The Global Burden of Diseases (2021) reported that in 2017, stroke ranked third in causing death and disability, as measured by disability-adjusted life-years (DALYs). The disease also remained the second leading cause of death when not accounting for DALYs (GBD, 2021). One in four persons over 25 will experience a stroke at some point in their lives (Martin et al., 2024) there were 12.2 million stroke incidents, with a prevalence rate of 101 million and 143 million DALYs resulting from the condition (GBD, 2021).

As the global population continues to age, the incidence of stroke is increasing, and there has been an observed rise in prevalence among young people in low- and middle-income regions (Katan & Luft, 2018). The burden of stroke is expected to increase further in the coming decades. Lukas-Noll et al. (2023) predict that in Europe alone, stroke cases will rise by 34%, with the prevalence among individuals above 80 years old tripling between 2010 and 2060. Additionally, the number of stroke survivors is estimated to increase by 27%. These outcomes are expected to lead to a rise in healthcare and non-healthcare expenditure on stroke. Understanding stroke epidemiology at the global, regional, and local levels is crucial for relevant agencies to enhance preventive and mitigation measures. Additionally, stroke has significant social and economic consequences which demand attention.

Stroke has a major impact on social and economic aspects of people's lives. Lukas-Noll et al. (2023) list the costs associated with stroke, including hospital expenses, medical expenses, long-term ambulatory care, caregiver burden, informal care, and social care services. The direct costs are primarily related to managing the disease and include preventive care for atrial fibrillation and hypertension, outpatient care, in-patient expenses, emergency care, rehabilitation, patient transportation, and medications. Additionally, social care entails expenses incurred due to residual

disability, which presents a significant economic and humanistic burden (Lukas-Noll et al., 2023).

On the other hand, indirect costs are incurred due to lost productivity, including loss of paid work, replacement after premature death (mortality costs), and decreased productivity due to illness (morbidity costs) (Joo et al., 2014). The cost of acute stroke care can be considerably high and is influenced by clinical and geographical factors. The expenses associated with admitting and transferring patients also add to the economic implications of the disease.

In the Middle East, the burden of stroke is high. According to El-Hajj et al. (2016), the annual incidence of the disease was as high as 250 per 100,000 people, while the prevalence ranged from 508 to 777 per 100,000. The authors found a high male-to-female ratio among the reported cases, indicating a considerable gender difference. Since Middle Eastern countries fall under the developing category, the prevalence of stroke among young people is significantly higher compared to developed nations. This observation can be attributed to a considerably high incidence of noncommunicable diseases in these populations.. After considering the Middle East context, it is crucial to draw attention locally to the Palestinian context, where there is still a paucity of data.

At the local level, In Palestine, there is no information about the burden of strokes in terms of stroke prevalence, a few studies have examined incidence rates. According to a study performed in northern Palestine Sweileh et al.,(2008) found that the annual crude incidence rate of stroke, which is 51.4 per 100,000. It is important to note that this study is relatively outdated but it is one of the very few Palestinian studies on stroke incidence. This study highlights the absence of a national stroke registry and constrains evidence-based planning for stroke management. Khatib et al. (2018) found Palestine to have 11% of deaths attributable to stroke, making it the second major mortality factor in the country. Risk factors are of the disease are obesity, diabetes mellitus, hypertension, smoking, high serum triglycerides, and high cholesterolemia, among others (Shahwan et al., 2019). Therefore, the cerebrovascular disease burden is a serious public health problem in Palestine, calling for stringent preventive and

mitigation measures, including efficient healthcare provision and population education to enhance individual and community-level awareness.

Due to the disabling effect of stroke and the social and economic burden borne by the individual, family, community, and the healthcare system, it is imperative to enhance the achievement of the most desirable outcomes which include minimising neurological damage, maximising functional recovery, and enhancing quality of life. Szlenberger et al. (2020) underscore the need to prioritise the reduction of brain injury and the promotion of maximum recovery, the two primary goals of stroke treatment and management. Early diagnosis of the condition entails prehospital rapid recognition of the onset by a specialist, as is prompt treatment and rehabilitation of the patient Effective stroke management minimizes neurological damage and promotes recovery through neuroplasticity which is the brain's ability to reorganize and form new functional connections that adaptively reorganise to enable brain healing and preserve memory processes or new learning for the patient.

Therefore, the effectiveness of stroke management is assessed by how much neurological damage is avoided and how well the patient gains functional abilities owing to sufficient neuroplasticity. While various approaches exist for measuring patient outcomes in stroke treatment, interest in patient-reported outcome measures continues to increase. Patient-reported outcome measures are questionnaires used to collect data about health outcomes directly from the perspectives of patients who experience these health outcomes. Over the last decade, there has been a rising trend of involving patients in the decision-making process regarding their care (Calvert et al., 2019). Healthcare professionals increasingly recognise the importance of focusing on measures that matter to the patients. This shift is crucial for improving healthcare and service delivery, making it essential to involve patients in selecting relevant measures and determining how assessments should be conducted. Calvert et al. (2019) suggest that one effective approach to achieving this goal is the implementation of Patient-Reported Outcome Measures (PROMs), which involve patients filling out questionnaires to assess disease progress and treatment effectiveness, particularly in terms of symptoms, functioning, and overall quality of life (QOL). This approach enables healthcare providers to understand the patient's perspective on their situation,

allowing them to use PROMs data to make informed decisions in health technology, pharmaceuticals, health policy, care delivery improvements, and effective patient-provider communication.

Mourits et al., (2024) note that the application of PROMs is becoming routine in managing individual patients, underscoring the importance of understanding how PROMs influence healthcare provision for post-stroke patients. PROMs facilitate individualized care by finding targets for treatment depending on patient perceptive, which could enhance the quality of healthcare. Instead of depending solely on medical records to evaluate a stroke patient's progress, new approaches emphasize on the need to collect data directly from patients. In other words, healthcare providers would benefit significantly from PROMs data and the traditional recovery measures, including survival, stroke recurrence, and the need for long-term care (Reeves et al., 2018). Therefore, it is important to understand the use of PROMs in stroke management to enhance success rates.

The benefits of applying PROMs to routine clinical work and healthcare research have been explored. In particular, PROMs help healthcare systems adopt approaches that enhance patient-centred care delivery while being cost-effective (Langstrup, 2018). Patients can report various physical and mental health aspectts, including symptoms, functional recovery, and health-related quality of life. Since PROMs data is reported directly by the patients, healthcare providers better understandd each patient's experience in the care process. As noted by Calvert et al. (2019), PROMs data has been well-established in research, including observational studies and clinical trials, where it has been used to produce evidence about the burden of disease and the effectiveness, efficacy, and cost-effectiveness of various interventions from the perspective of care recipients. On the other hand, using PROMs in healthcare provision at the individual patient level is relatively new. Still, its advantages have been noted, including enhancing decision-making and enabling providers to tailor treatment to each patient's needs.

Regarding stroke, PROMs have proven to be influential in determining the management of the condition, focusing on parameters that patients consider important, such as physical and mental health, patient satisfaction, and rehospitalization rates. An

important aspect of comparison between traditional outcome measures and PROMs lies in the assessment of recovery, where modified Rankin Scale (mRS) results may not necessarily correspond to patient-reported outcomes (Sanchez-Gavilan et al., 2022). Healthcare providers who rely solely on mRS may make crucial decisions based on the generated scores, which can be considerably different from what the patients feel about the disease progress and treatment outcomes. Therefore, while implementing evidence-based outcome assessment protocols, such as mRS, cannot be abandoned, healthcare providers must incorporate PROMs to enhance patient-centred evaluation of the effectiveness of disease management (Sanchez-Gavilan et al., 2022). Particularly, the outcomes of stroke treatment vary from one patient to another, depending on factors such as timely diagnosis and treatment initiation. Thus, relying solely on traditional outcome measures may be quite limiting.

An advantage of using PROMs in stroke management is that the approach addresses some limitations of traditional patient outcome assessments. For instance, mRS focuses only on motor disability and its improvement following therapy, thus failing to account for other critical health indicators that patients find valuable (Sanchez-Gavilan et al., 2022). Instead of relying solely on mRS to determine functional recovery, a doctor should combine it with PROMs and compare the findings for increased sensitivity of the progress measure. Research has previously demonstrated a major disparity between provider-generated values and patient-reported outcomes, underscoring the significance of reconciling evidence-based medicine (provider-generated) and value-based medicine (patient-reported) (Altamirano-Bustamante et al., 2013). This finding demonstrates the need for healthcare providers to rely on assessment protocols to gauge clinical outcomes and pay attention to each patient's and their family's experience.

In contrast to other regions that utilized standardized tools such as Patient-Reported Outcomes Measurement Information System Global-10 (PROMIS-10) and RIKSSTROKE, there are no studies in Palestine have adopted these tools. Also there is not much research on PROMs for stroke patients in this country, which creates the need for the current research. Considering that the burden of stroke is significantly high

in Palestine, as indicated earlier, studying the role of PROMs in enhancing effective assessment of patient outcomes is critical

In summary, PROMs are increasingly recognized and used worldwide, but in the Palestinian context their use is still absent. This gap, along with the local stroke burden, require systematic evaluation of patient-reported outcomes measures. to improve patient-centered care and guide policy changes in Palestine.

1.2 Problem Statement

Burden of stroke in Palestine is quite serious. The death rate due to the disease was found to be 11%, making it the second leading cause of mortality in the country. Due to the disabling effect of stroke on the physical and mental health plus the social and economic burden on the individual, family, community, and the healthcare system, it is imperative to enhance the achievement of the most desirable health outcomes for stroke survivors which include, to minimize neurological damage, to maximize functional recovery, and to enhance quality of life.

New approaches emphasize on the need to provide patient centred care where patients' perspective and perception are taken into account and data is collected directly from them, instead of merely depending on healthcare providers judgments to evaluate a stroke patient's progress. In other words, healthcare providers would benefit significantly from patient reported outcome measures data in addition to the traditional recovery measures. as PROMs can capture the patient's experience of stroke recovery, including physical functioning, mental health status, and satisfaction with care. Therefore, it is important to apply PROMs in stroke management.

Even though there is an international growing interest and focus on patient-reported outcome measures for stroke patients across health systems, in Palestine the existing research is very limited and no studies applied standardized tools as PROMIS-10 or RIKSSTROKE especially in assessing how different variables such as demographics, stroke type and rehospitalization can affect PROMS, the existing studies depend on clinical outcomes rather than patients reported outcomes. This knowledge gap should be addressed in order to identify opportunities for improvement in stroke care to

include patients' voices in order to enhance the overall quality in healthcare services at Palestinian hospitals.

1.3 Research Significance

Stroke is one of the leading causes of non-communicable illness deaths worldwide each year. A high prevalence of stroke results in physical and mental disabilities, increased economic and social burden. (Rochmah et al., 2021).

The use of PROMs in healthcare provision at the individual patient level is relatively new, but its advantages have been noted, including enhancing decision-making and enabling providers to tailor treatment to each patient's needs, PROMs help healthcare systems adopt approaches that enhance patient-centered care delivery while also being cost-effective (Langstrup, 2018). Patients can report on various aspects of their physical and mental health, including symptoms, functional recovery, satisfaction of care and health-related quality of life, since PROMs data is reported directly by the patients.

This study can guide the Ministry of Health to apply PROMs tools and incorporate them into national stroke care strategies. As PROMs cover broad perspective such as patient satisfaction, quality of life, mental health, physical health, social role participation which are not covered by traditional indicators like the modified Rankin Scale (mRS) that focuses mainly on physical disability.

The findings of this study are expected to give insights into the effectiveness of stroke care in Palestinian hospitals also provides an opportunity to evaluate the applicability of PROMs in Palestinian hospitals, also to help Palestinian healthcare providers to prioritize the perspectives of patients in determining the effectiveness of care delivery among stroke patients and guiding policy changes to positively impact patient well-being and the overall quality of healthcare services

1.4 Aim of the Study

To assess the level of three key dimensions of PROMS (Patient Satisfaction, Physical Health, and Mental Health) and to assess how different variables such as patient demographic, stroke type, length of stay, ability to perform social roles, perception of overall health and rehospitalization among stroke patients in Palestinian hospitals can affect PROMS.

1.5 Objectives of the Study:

1. To assess the interrelationships between the three PROM dimensions (Patient Satisfaction, Physical Health, and Mental Health) among stroke patients in Palestine.
2. To determine the relationship between rehospitalization status, rehospitalization frequency stroke type and length of hospital stay with PROMs across the three dimensions.
3. To examine the effect of demographic characteristics (age, gender, income, living arrangement and hospital region) on PROMs among stroke patients.
4. To assess the relationship between the ability to perform social roles and perception of overall health with PROMs among stroke patients.

1.6 Research Question

1. What are the relationships among Patient Satisfaction, Physical Health, and Mental Health dimensions in stroke patients?
2. What is the relationship between rehospitalization status, rehospitalization frequency stroke type, length of hospital stays and Patient-Reported Outcome Measures?
3. What is the effect of demographic factors on Patient-Reported Outcome Measures?
4. What is the relationship between ability to perform social role, perception of overall health with Patient-Reported Outcome Measures?

1.7 Research Hypothesis

1. There is no significant relationship among the three PROM dimensions (Patient Satisfaction, Physical Health, and Mental Health) among stroke patients in Palestinian hospitals.
2. There is no significant relationship between clinical factors (rehospitalization status, number of readmissions, stroke type, and length of hospital stay) and Patient-Reported Outcome Measures across the three dimensions.
3. There is no significant relationship between demographic characteristics (age, gender, monthly income, living arrangement, and hospital region) and Patient-Reported Outcome Measures across the three dimensions.
4. There is no significant relationship between the ability to perform social roles, perception of overall health and Patient-Reported Outcome Measures across the three dimensions

1.8 Research Expected Outcome

The study aims to offer empirical evidence on the relationship between patient reported outcomes across three domains (Patient Satisfaction, Physical Health, and Mental Health) and factors such as rehospitalization, stroke type and demographics, length of stay, perception of overall health and ability to perform social roles and activities aiming to enhance the quality of health services, improve patients' outcomes and deliver more personalized care among stroke patients in Palestine.

The findings of this study would provide a starting point for the development of new protocols and staff training programs regarding stroke patient management.

1.9 Description of Thesis Chapters

This thesis is structured as follows:

- **Chapter two literature review:** This chapter offers a review of the existing literature, highlighting global, regional, and local burden of stroke disease. It reviews studies on patient-reported outcome measures (PROMs) in connection with rates of rehospitalization, patient satisfaction, demographic factors, mental and physical health, and the healthcare system in Palestine. The most relevant and important information are included and gaps in literature are highlighted.

- **Chapter three conceptual framework:** includes an overview of the conceptual framework of this research outlining both dependent and independent variables and their relationship and operational definitions.

- **Chapter four methodology:** includes the study design, setting, population and sample size, sampling technique, inclusion and exclusion criteria, data collection instrument, validation of the research instrument, data collection and analysis and ethical considerations.

- **Chapter five results:** highlights the results of the study in the form of reasoned conclusions, descriptive presentation of the sample characteristics, model validation, correlational analysis and testing of the hypotheses .

- **Chapter six discussion:** it includes discussion of the findings in relation to the literature, conclusions and offering recommendations, and future research and strengths and limitations of this study.

Chapter 2: Literature Review

The literature review chapter was done by systematic search of databases including **PubMed, and Google Scholar** to identify studies on **PROMs in stroke patients** and to identify knowledge gaps. This chapter will focus on the use of Patient-Reported Outcome Measures providing a thorough examination of the body of research and information relevant to stroke care and outcomes. In this section, gaps in knowledge are assessed, and areas where this study will help with stroke care and therapy are also noted. This study's global, regional, and local burden of stroke parts include an overview of the epidemiology of stroke, encompassing information on its prevalence, incidence, and related mortality rates on a worldwide, Middle Eastern, and Palestinian level. Social, economic, and healthcare challenges posed by stroke, particularly in low- and middle-income countries, are also emphasized in this section. Another section of the literature is the PROMs, where this critical tool for evaluating healthcare outcomes from the patient's perspective is introduced, and literature about it is discussed. Furthermore, the link between PROMS and rehospitalization, PROMS and patient satisfaction, PROMS and clinical and demographic factors, PROMS and mental and physical health will be included in this chapter. Other subsections that will be covered in the literature review part are regional and Palestinian studies on PROMs in stroke care and the healthcare system in Palestine.

2.1 Stroke disease: Global, regional, and local burden

Stroke is a disease with a considerable global, regional, and local burden. Research demonstrates that the condition is highly prevalent in different regions. According to Global Burden of Disease (2021), stroke was the third leading cause of death and disability in the world as of 2017 and the second cause of death without DALYs (Disability-Adjusted Life Years). The study revealed that in 2019, the incidence of the disease was 12.2 million, while the prevalence was 101 million, and DALYs accounted for 143 million. The trend is expected to remain serious unless effective preventive and mitigation interventions are implemented, with Europe alone projected to experience a 34% increase in prevalence by 2060 (Lukas-Noll et al., 2023).

Existing literature shows that the situation is equally grave in the Middle East, the most recent data shows that the prevalence of stroke in both the Middle East and North Africa (MENA) continues to be significantly high. For instance, in 2019, the region had a prevalence rate of 7.3 million cases, while the age-standardized prevalence was 1537.5 per 100,000 people (Jaberinezhad et al., 2022). Although this rate presented a decrease of 0.5% within a decade – from 1990 – such several cases was still considerably high Similarly, the local burden of stroke in Palestine is quite serious. (Khatib et al., 2018) and Palestine has a high prevalence of major risk factors for stroke, including smoking, diabetes mellitus, hypertension, high cholesterolemia, high serum triglycerides, and obesity, among others. A high prevalence of stroke results in increased economic and social burden, which includes hospital expenditure, lost productivity, the cost of rehabilitation, long-term care, and prolonged reliance on social services.

Understanding the epidemiology and the burden of stroke worldwide necessitates proper management and assessment of stroke and provides foundation for exploring patient outcomes through patient-reported outcome measures. Traditional data show the scope of the issue but they do not capture the impact on stroke patients lives, they do not capture the impact on individual lives. PROMs fill this knowledge gap causing a shift from the emphasis on mortality rates to the disease outcomes, experience of recovery and long-term disability.

2.2 Global research on PROMs

Patient-reported outcome measures are crucial in managing stroke patients and are closely related to various indicators of recovery and healthcare quality Global research illustrated the shift from using PROMs as simple assessment tools to a patient-centered care where PROMs are utilized as comprehensive framework. According to Smith et al. (2021), there is an increased interest in the routine application of PROMs in the care of individual patients, and understanding how PROMs affect care for post-stroke patients is essential in clinical practice. Reeves et al. (2018) underscore the importance of collecting health information directly from stroke patients instead of

relying entirely on traditional clinical practices, such as survival, the need for long-term care, and stroke recurrence.

Research has revealed differing aspects of the association between PROMs and parameters such as functional recovery, rehospitalisation rates, and patient satisfaction with care. Sanchez-Gavilan et al. (2022) found that the assessment tool demonstrated favourable readings for patients assessed for functional recovery three months after discharge from the hospital using the modified Rankin Scale (mRS). However, a significant proportion of the respondents had unfavourable PROMs, including overall health status (OHS), anxiety and depression (HADS), and mental health Patient-Reported Outcomes Measurement Information System (PROMIS) indicators. In other words, the authors noted that the findings of mRS, which depict a patient's functional recovery, may not necessarily correspond with their PROMs. In this case, the mRS demonstrated desirable scores, while the PROMs were unfavourable (Sanchez-Gavilan et al., 2022) This highlights an important argument of this literature review: clinical tools alone are not enough as they don't look into patients' perspective on disease outcomes, health or wellbeing. The researchers further found that patient demographic and clinical characteristics can influence PROMs. Factors such as female gender, admission to a socio-rehabilitation centre (SRC) after discharge, and higher mRS at discharge predict unfavourable PROM results (Sanchez-Gavilan et al., 2022). However, it's important to note that this valuable insight from a high-income country may not fully capture low resources settings patients. These findings underscore the importance of patient-centred assessment of healthcare outcomes. It is a shift from the previous focus on the number of services delivered, paying more attention to what patients find valuable (Marzorati & Pravettoni, 2017). This perspective emphasises the need to enhance patient-centeredness in determining quality healthcare provision and successful treatment of various conditions, including stroke.

According to Reeves et al. (2018), it is important to distinguish between clinician-reported outcomes, which entail data collection by the provider as they observe the patient and PROMs. Similarly, assessments should differentiate between data provided by a caregiver about a patient, referred to as observer-reported outcomes, and PROMs. In this sense, PROMs enable a provider to understand the patient's

perspective on their functional status, symptom burden, and QoL. Sanchez-Gavilan et al. (2022) note that the major difference between mRS and PROMs is that the former is limited in focusing on motor disability, which fails to reflect other crucial and valuable health indicators for patients. Therefore, they inferred that combining and comparing the mRS scores with PROMs can enhance the sensitivity of outcome measures for stroke patients. These findings align with previous research that shows a disparity between doctors' and patients' values regarding healthcare outcomes (Altamirano-Bustamante et al., 2013). According to Altamirano-Bustamante et al. (2013), there is a need to reconcile evidence-based medicine (EBM) with values-based medicine (VBM), since patients not only care about the application of updated treatment protocols but also about values such as warmth, care, understanding, and communication. The disparity between EBM and VBM is evident in the disconnect between mRS findings and PROMs, as noted by Sanchez-Gavilan et al. (2022).

The implications of this disparity between mRS findings and PROMs is that healthcare providers should begin paying more attention to what patients and their families value in care provision. Sanchez-Gavilan et al. (2022) state that their interaction with the respondents and their families revealed that what they consider crucial for their well-being may not always match physicians' protocols. The authors noted that using this approach makes it possible to devise new care pathways for improved perception by the recipients. The study further emphasised the importance of aligning PROM findings with patient characteristics, including gender, age, and work status, thus necessitating modifying PROM collection whenever necessary (Sanchez-Gavilan et al., 2022). According to Reeves et al. (2018), assessing the symptoms suffered by stroke patients is most effective through self-reported data. Using PROMs for this purpose enables the provider to understand the parameter, such as the level of anxiety or fatigue, from the patient's perspective, even though they may still use treatment protocols to enhance their decision-making. The authors consider the usefulness of PROMs in providing timely information that can identify health problems, guide provider decisions, assess provider and facility performance, and direct personalised care. As Boyce et al. (2014) note, PROMs can enable healthcare professionals to gather information to evaluate their performance against their

counterparts, thereby helping to improve healthcare quality. This position aligns with Marzorati and Pravettoni's (2017) emphasis on incorporating VBM in healthcare delivery, a concept that relates to PROMs in that value is considered in terms of what patients and their loved ones find important. The authors note that with an increased focus on patient preferences and their perception of quality of care, new paradigms have emerged, with providers increasingly paying attention to the experience of individual patients. Thus, it is evident that PROMs have been a significant factor in enabling the shift from strictly EBM-centred care delivery to the incorporation of VBM. And so, PROMs serve as a bridge to connect between clinical outcomes and the lived experiences of patients, PROMs were linked to predict critical outcomes such as re-hospitalization

PROMs and re-hospitalisations

PROMs have also been found to predict hospitalisation and emergency department (ED) visits. In an investigation of outcome measures using the Patient-Reported Outcomes Information Measurement System (PROMIS), Katzan et al. (2021) found that PROMs were crucial predictors of ED visits and admissions within a year of initial treatment for ischemic stroke. Their study involved 1,696 people suffering from ischemic stroke, intracerebral haemorrhage, transient ischemic attack, and subarachnoid haemorrhage. The PROMs under investigation included QoL in Neurological Disorders, cognitive function, Patient Health Questionnaire-9, sleep disturbance, PROMIS Global Health, anxiety, fatigue, social role satisfaction, pain interference, and physical function, with findings indicating that unfavourable scores predicted high rates of ED visits and hospitalisation, except for the PROMIS sleep measure (Katzan et al., 2021). The benefits of properly determining a stroke patient’s PROMs are underscored by the fact that hospitalisation and re-hospitalisations are associated with increased healthcare costs, poor survival rates, and reduced overall well-being, which have been deemed potentially preventable in research (Katzan et al., 2021; Lee et al., 2013).

The importance of predicting hospital readmissions is underscored by the high rate of rehospitalisation and mortality within one year of stroke and following hospital

discharge. Khan et al. (2012) found that about a third of all the stroke survivors studied either died within a median of 5.5 months since discharge from the hospital as a result of vascular complications or experienced a recurrence of a vascular event. In their longitudinal study, Lee al. (2013) found that half of the participants were either readmitted or died in the first year of stroke. The authors found that individuals with subarachnoid haemorrhage had the highest mortality rate, while those with intracerebral haemorrhage had the highest consumption of first-year medical costs. Lee et al. (2013) further noted that 45% of patients who survived their initial hospital admission experienced rehospitalisation or death in the first year of suffering the stroke. These data underscore the need to make highly accurate predictions of these outcomes for better patient care planning. Katzan et al. (2021) found that about half of the stroke patients in their study experienced ED visits and hospitalisations at least once within one year of being treated, indicating high frequency. The authors noted that PROMs could effectively predict these outcomes. According to Katzan et al. (2021), self-reported cognition was the most effective predictor of ED visits compared to other PROMs. These findings were consistent with previous studies that had indicated cognitive deficits as a major risk factor for ED visits (Walker et al., 2005). Katzan et al. (2021) noted that patients whose self-reported emotional well-being was worse when compared to others in the same category had a lower threshold for ED visits and had access to fewer alternatives to care. Katzan et al. (2021) also found that PROMs interact with patient characteristics, including race, in predicting hospital visits and admissions. However, selection bias is a key limitation of this study as the cohort had a mild degree of disability. Which restricts the applicability to stroke cases that are more severe.

Despite the significant effectiveness of PROMs as predictors of hospitalisations, they cannot entirely replace EBM and provider judgment. Katzan et al. (2021) note that the clinician-reported functional status of stroke patients was crucial in determining the accuracy of predicting hospital admission. This assertion is in line with the literature findings that healthcare quality depends on both evidence-based practices that guide provider judgment and value-based care that relies on patient-reported data (Altamirano-Bustamante et al., 2013). Providers must gather PROMs and

compare the findings with the data collected using evidence-based protocols such as the mRS assessment tool for functional recovery. In other words, providers should apply the PROMs and evidence-based practice findings even when predicting readmission rates. The benefits of PROMs also extend to the human element of care such as patient satisfaction.

2.2.2 PROMs and patient satisfaction

Patient-Reported Outcome Measures (PROMs) are closely related to patient satisfaction with healthcare delivery and their overall experience in the hospital. Lapin et al. (2019) note that over the last two decades, the use of PROMs to evaluate patient satisfaction and hospital ratings has increased, with a corresponding application in clinical management. The authors emphasise the significance of routinely collecting PROMs to assess patients' satisfaction with the healthcare services offered, information that can be utilised to improve patient experience through enhanced patient-provider communication. According to Chimatiro et al. (2018), the degree to which stroke patients are satisfied with the care received in the hospital determines, to a considerable extent, their compliance with treatment, particularly post-discharge. Using the Patient Satisfaction-With-Stroke-Care (SASC) assessment tool, the authors were able to obtain details about the effectiveness of the care provided from the perspective of the patients, with the results indicating high patient satisfaction – a median of 19.5 out of 28 points – and no difference observed between males and females (Chimatiro et al., 2018). As a result, healthcare providers can rely on patient-reported outcome tools like SASC to effectively assess the quality of services offered in a facility and compare these findings with information drawn from evidence-based protocols.

The insights gathered from the data demonstrating the perceived QoL, functional outcomes, and level of patient satisfaction are critical in helping facilities and providers determine the quality of services offered to stroke patients (Myint et al., 2017). Therefore, the importance of PROMs not only entails comprehending the patient’s status after being treated for stroke, but they also enable healthcare institutions and providers to identify areas of service provision that need improvement. Rathore et

al. (2015) found that patient satisfaction is closely related to functional recovery and improved survival rates through adherence to treatment guidelines. Cramm et al. (2012) highlight the significance of patient-reported satisfaction as a measure of the quality of care an institution provides and the QoL for stroke patients. The authors underscore the need to consider the welfare of the caregiver when assessing a stroke patient's QoL. In most cases, people who take care of a stroke patient also require help to manage the changes in their lives necessitated by the unfortunate condition of their loved one. According to Khalid et al. (2016), younger caregivers reported feelings of isolation, depression, and being overwhelmed by having to provide care to stroke patients at considerable personal cost. Khan et al. (2012) found that in Pakistan, the majority of caregivers are family members who are largely unsupported by healthcare personnel, thus underscoring the need for measures to enhance the support for families of stroke patients. Therefore, while assessing the level of each patient's satisfaction is crucial, the welfare of the caregivers should not be neglected.

Research into assessing patient satisfaction in stroke treatment goes back to two decades ago, highlighting this parameter's significance. Boter et al. (2003) evaluated the clinometric evaluation of patient satisfaction using the Satisfaction with Stroke Care Questionnaire (SASC-19) and found it a highly reliable and valid instrument to collect self-reported data regarding satisfaction with inpatient and post-discharge care. Cramm et al. (2012) note that higher satisfaction with care considerably alleviates stress for the patient and their caregiver, thus improving their QoL. These findings inform the need to direct healthcare delivery in a manner that emphasises support for both the patients and caregivers. The significance of patient-reported satisfaction with care is underscored by Lapin et al. (2019), who found that patients with positive PROMs also demonstrated high odds – 30-50% – of having increased satisfaction with care. The authors attributed this outcome to the critical influence of improved patient-doctor communication, which has previously been demonstrated in research (Hung et al., 2015). Lapin et al. (2019) found that a major implication of PROMs was that the patients feel an increased sense of control in the treatment process and are confident that the doctors understand their health better. The authors note that when patients are allowed to report new or troubling symptoms, their management of the condition and

compliance with therapy improves. Since PROMs point to issues that patients consider important, it allows the providers to attend to their concerns more effectively, thus improving satisfaction with care (Solberg et al., 2015).

Their indication of patient experience highlights the importance of PROMs to healthcare provision. Solberg et al. (2015) found that 12 of the 19 outcomes they investigated were directly associated with patient satisfaction, thus underscoring the significance of PROMs to the patients, including identifying the source of pain, having confidence in the treatment approach, understanding possible outcomes, regaining normal functions, and avoiding functional loss in the long term. Furthermore, the researchers found that when patients feel cared for and respected, they can overcome even the most unfavourable outcomes, thus emphasising the significance of value-based care. As Hung et al. (2015) note, understanding the balance between care outcomes, healthcare expenditure, and patient satisfaction is crucial in driving the value and quality of service provision. The authors found that patient satisfaction is related to physical, mental, and general health scores, provider interactions and patient age. Lapin et al. (2019) found that patients with more comorbidities demonstrated greater satisfaction if they perceived PROMs to help providers understand their health status.

However, it is also important to note that patient satisfaction may not always correspond with the QoL, particularly when considering the permanent loss of various abilities, including walking and working due to the stroke. As Chimatiro et al. (2018) note, it is possible for stroke patients to report high satisfaction with care even when the indicators of the QoL, such as using the EuroQol-5 Dimension with five levels (EQ-5D-5L) were poor – walking problems, low self-care capacity, and loss of capacity to perform usual activities. These findings suggest that patients may find the services provided by healthcare professionals to be satisfactory even when they do not experience a significant improvement in their quality-of-life following stroke treatment This suggests not to rely on satisfaction measures alone instead including a comprehensive PROMs to assess the full impact of stroke. Chimatiro et al. (2018) also hypothesise that the reason why there can be a disparity between patient-reported satisfaction with healthcare services and their QoL may be because the respondents

may not be fully aware of what constitutes satisfactory care – they do not know the difference between their experience and what it ought to be.

2.2.3 PROMs and patients' clinical and demographic factors

Furthermore, patients' clinical and demographic factors can influence their patient-reported outcomes. According to Martins et al. (2022), although acute stroke interventions, including perfusion therapy and stroke units, considerably impact patient outcomes, disparities in patient characteristics and access to care are important factors. Sanchez-Gavilan et al. (2022) found that female patients had a higher rate of unfavourable PROMs than their male counterparts. The authors also noted that patients who were discharged to stroke rehabilitation centres demonstrated poor results in self-reported measures. Chen et al. (2023) note that demographic and stroke characteristics were significant in predicting rehabilitation outcomes, with age, gender, and years of education being crucial factors in forecasting favourable results such as successful home discharge. Similarly, clinical characteristics, such as duration since the stroke, type of stroke – ischemic or haemorrhagic –, side of hemiplegia, and National Institute of Health Stroke Scale (NIHSS) scores, were found to be critical factors in the target outcome variables (Chen et al., 2023). The authors also noted differences in PROMs between patients with acute stroke and those with chronic conditions.

Reeves et al. (2018) note that the patient's cognitive status considerably affects their ability to understand and respond to questions, thus influencing the collection of PROMs. The authors contend that if the data collection entails interviews, the patient response can be affected by hearing loss, language dysfunction, or visual problems. The researchers further argue that a quarter to a third of stroke patients have at least one deficit that could complicate their ability to complete a PROM collection tool. Previous research has also demonstrated the impact of patient characteristics, such as age, race, gender, and health status, on the influence of stroke-related deficits on PROM collection (Lisabeth et al., 2014). Understanding these effects could enable providers to circumvent the barriers to accurately determining patient outcomes following stroke occurrence and treatment.

Demographic and clinical factors influence PROMs and various indicators, including functional recovery and readmissions. For instance, the time since suffering a stroke has been found to predict functional outcomes for patients with acute stroke and the motor function of the upper limb post-intervention for those with chronic stroke (Chen et al., 2023; Harari et al., 2020; Thakkar et al., 2020). Understanding these interrelationships among patient factors, PROMs, and evidence-based practice outcomes is crucial for healthcare providers to correctly evaluate the quality of care provided and plan for quality improvement. Khalid et al. (2016) found that such characteristics as the age of a stroke survivor, gender, socioeconomic status, education level, family and marital status, functional disability, smoking, had a significant association with the QoL.

2.2.4 PROMs and patients' mental health

Stroke is associated with a wide range of mental health issues. According to Islam et al. (2025), stroke is the third leading cause of disability globally, as there are 143 million disability-adjusted life years (DALYs) cases across the work, putting patients at risk of different psychological problems. One of the main reasons why stroke is associated with a significant mental health problem among the affected patients is the unexpected nature of the disease. Stroke patients often complain from Diminishing of memory, mental speed and concentration. (Glimmerveen et al., 2023) Also, post-stroke depression is the main cause of disability among patients (Islam et al., 2025). According to Shewangizaw et al. (2023), depression is the most common neuropsychiatric disorder that can happen early or in the late stages of stroke, and this condition affects almost a third of patients who have survived stroke. Besides, Post-stroke Depression (PSD) can occur due to a pre-existing condition, or at times, it may occur after the patients have suffered a stroke. PSD can lead to poor functional outcomes and, at times, are also associated with a risk of mortality among the affected individuals. Fundamentally, PSD also affects the severity of stroke, leading to more complications for the patients, given that PSD affects almost 31% of patients who are suffering from stroke (Braadt et al., 2024). In this light, PSD reduces the health-related quality of life (HRQoL) as well as other health- and socio-economic issues that are

associated with higher levels of impairment (Braadt et al., 2024). Moreover, PSD also reduces the chances of successful rehabilitation and lower rates of return to work. Post-stroke anxiety is another mental health challenge that affects patients who are suffering from this illness, and this may be caused by the associated depression, severity of a stroke, and certain cognitive impairments that are experienced as a result of the disease (Chun et al., 2022). Fundamentally, treating these psychiatric disorders is integral for lowering the cost of healthcare by enabling return to work and lowering the utilization of healthcare systems by patients. Among the at-risk patients, it is important to identify the disorders as well as ways to treat these conditions (Stein et al., 2018).

As indicated, the PROMs that are related to mental illnesses that occur as a result of stroke entail lower quality of health and poor health outcomes.

According to Dossa et al. (2011), stroke patients who have mental illness are more likely to be re-hospitalized compared to those who do not have these disorders. Moreover, mental health challenges among patients who are suffering from stroke are also associated with higher mortality rates and lower functional outcomes (Dossa et al., 2011). A study by Syafii Harahap et al., 2021 found that a low level of education decreases the cognitive status of patients who are suffering from stroke among hospitalized patients. Even so, mental illnesses such as depression are predictors of the physical component of QoL of elderly people after suffering from a stroke (Telebuh et al., 2025).

Patient-reported outcomes show problems beyond physical functioning and give unique perspectives on stroke rehabilitation. Pinter et al.,(2022) reported 80% study participants had positive functional outcomes three months after their stroke based on traditional clinical tool mRS, but many were still suffering from pain (25.3%) and anxiety/depression (22.8%). QoL was significantly affected by pre-existing depression, cognitive dysfunction, and NIHSS scores, particularly in females. These findings underscore the importance of PROM instruments in detecting emotional and cognitive issues and guiding more patient centered interventions.

Mental functioning is a very important aspect and should ideally be included in patient-reported outcome measures (PROM). There are a number of readily accessible tools, including the Patient Reported Outcomes Measurement Information

System PROMIS-10, the Stroke Impact Scale, and the Short Stroke Specific Quality Of Life Scale (SS-QOL-12), which are used to assess the mental and physical health of stroke patients. (Glimmerveen et al., 2023). In addition to the role of PROMs in assessing mental, PROMs are considered very important for assessing and understanding the stroke patients' physical health.

2.2.5 PROMs and patients' physical health

Stroke can also have a significant negative health impact on the at-risk patient, which could lead to long-term impairments that influence recovery and QoL . PROMs are instrumental in offering valuable insights into these effects and thus can help in aligning stroke care outcomes with the experiences of the affected patients. One of the physical challenges that are associated with stroke is motor impairment and mobility limitations. Integrally, motor impairments such as hemiparesis (weakness) or hemiplegia (paralysis) are common after a stroke, and these conditions can limit movement, disrupt balance, and reduce patients' ability to independently perform daily activities (Rössler et al., 2020). Mobility-related PROMs are useful in evaluating the independence in functioning, gait, and the capacity of patients to perform functions such as walking or transferring from bed to chair. Improving mobility can be done through physiotherapy and physical exercise, as this will improve the treatment outcomes (Paprocka-Borowicz et al., 2021). Nonetheless, access to physiotherapy is a significant challenge to at-risk patients, a factor that has led to poor outcomes in the effort to address the physical challenges experienced by patients suffering from stroke. Fundamentally, access to stroke rehabilitation programs is a significant challenge to the patients, an indication that there are gaps in care that influence the outcomes in mobility (Lombardo & Islam, 2023).

Another physical challenge that is associated with stroke is difficulties in swallowing (Dysphagia), which increases the risks of malnutrition, dehydration, and aspiration pneumonia (Karisik et al., 2024). Delayed or inadequate dysphagia management is a common problem faced by patients, leading to the need for improved screening and early intervention protocols to help improve patient outcomes.

Moreover, spasticity which causes muscle stiffness and abnormal tightness, is another common post-stroke condition leading to chronic pain and restricts joint movement, thus resulting in complications during rehabilitation. Fundamentally, Pain and spasticity-related PROMs are integral in assessing the pain severity, frequency, and impact on daily functioning. Insufficient pain management resources contribute to prolonged suffering and slower recovery of stroke patients.

A long-term follow-up study involving stroke survivors from Sweden showed that 10 years after the stroke, most of the survivors self-reported good functional status and physical health. Of the 145 subjects, 73% were independent in activities of daily living, 71% had no or mild disability, and 90% were living independently in their own homes. Yet 39% had moderate pain, while some needed help with mobility (14%) and daily living activities (22%). Highlighting the importance of proms in addressing the physical functioning in stroke survivors even in the long term. (Jönsson et al., 2014) a key strength of this study is the longitudinal nature, providing a long-term perspective which is often missing in shorter term studies. Providing a deeper understanding.

Integrating PROMs into stroke care strategies is essential in providing feedback on how stroke affects patients' physical health and thus can be used to offer data that shapes recovery pathways in Palestinian hospitals. Aspects such as access to rehabilitation services, pain management programs, and patient-centered interventions are some of the physical health-related PROMs that must be addressed to ensure the effective recovery of stroke patients. In particular, factors such as the limited availability of physiotherapy, occupational therapy, and speech therapy services hinder recovery from motor impairments and dysphagia. Moreover, the lack of resources useful in managing chronic pain and spasticity affects patient satisfaction and overall quality of care. Therefore, these PROMs must be taken into consideration for efficient health outcomes which is especially important for low- and middle-income countries like the Middle East as the stroke burden is heavier.

2.3 Regional research on PROMs

Individuals in low- and middle-income countries face a heavier burden than those in high income countries HICs. The burden of stroke-related death and disability outcomes were projected to increase substantially from 2021 to 2050. (Cheng et al., 2024)

Alshahrani, (2020) found that Saudi stroke survivors perceive their QoL poorly, as they perceived their physical health outcomes to be the poorest domain. Furthermore, the respondents' perceptions of social interactions and psychological health outcomes were also poor. Which can be interpreted by the poor physical functioning and impaired cognitive functions as a result of stroke.

Similar outcomes were reported in a study on stroke survivors in Jordan using Stroke Impact Scale (SIS) noted that stroke survivors reported moderate levels of QoL, with significant impairments in communication, physical, and emotional domains.(Malkawi et al., 2024)

Addressing stroke patients emotional health could improve functional outcomes Charfi et al., (2021) study in Tunisia reported the prevalence of depression and anxiety one year after stroke among 147 participant using The Hospital Anxiety and Depression Scale (HADS) questionnaire and the modified Rankin scale to assess disability stroke patients during the first year after stroke and their relationship with clinical and functional outcomes. The study included 147 patients and used the HAD scale for screening emotional disturbances and the modified Rankin scale to assess disability. Findings showed Anxiety was experienced by 55.1% of stroke patients, and 67.3% reported having depression.

It’s important to note that Depression was more prevalent in men, and older age and higher levels of education were associated with higher anxiety rates. Functional impairment was found to be significantly predicted by anxiety and depression. According to these findings, addressing emotional well-being after a stroke may enhance functional outcomes

This Research from the Middle East and neighboring regions demonstrates the burden of stroke and the value and importance of PROMs and so. These studies

confirm the PROMs used and identified globally can also apply to regional countries .

Table 2.1 provides a summary of some key studies globally and regionally, to illustrate the PROM tools. In order to give a closer look and s comparison of methodologies and instruments in stroke research, to identify trends and gaps in PROMs application.

Table 2.1: Summary of Key Studies on (PROMs) in Global and Regional Stroke Research

Title of the Study	Author(s)	Year	Patient-Reported Outcome Measures Tool(s)	Country
Added value of patient-reported outcome measures after an acute stroke and early predictors of ninety days patient-reported outcome measures	Sanchez-Gavilan, E., Montiel, E., et al.	2022	Modified Rankin Scale, Patient-Reported Outcomes Measurement Information System, Hospital Anxiety and Depression Scale, Overall Health Status	Spain
Patient-reported outcomes predict future emergency department visits and hospital admissions in patients with stroke	Katzan, I. L., Thompson, N., et al.	2021	Patient-Reported Outcomes Measurement Information System Global Health, Patient Health Questionnaire	United States of America
Association between clinician reported outcome and patient reported outcome measures one year after stroke	Glimmerveen, A., Holewijn, S., et al.	2023	Patient-Reported Outcomes Measurement Information System-10, ICHOM Stroke Standard Set	Netherlands
Functional status and patient-reported outcome ten years after stroke: the Lund Stroke Register	Jönsson, A. C., Delavaran, H., et al.	2014	EuroQol Five Dimensions, Activities of Daily Living, Short Form Health Survey (SF-36)	Sweden
Stroke patients' outcomes and satisfaction with care at discharge from four referral hospitals in Malawi	Chimatiro, G. L., Rhoda, A. J., et al.	2018	Functional Independence Measure, EuroQol Five Dimensions, 5 Levels, Satisfaction with Stroke Care questionnaire, Clinimetric Satisfaction	Malawi

Title of the Study	Author(s)	Year	Patient-Reported Outcome Measures Tool(s)	Country
			with Stroke Care questionnaire	
Quality of life after stroke in Pakistan	Khalid, W., Rozi, S., et al.	2016	Stroke Specific Quality of Life Scale, RAND 36-Item Health Survey	Pakistan
Quality of Life among Individuals with Stroke in Jordan	Malkawi, S. H., Amro, A. F., & Jaber, A. F.	2024	Stroke Impact Scale	Jordan
Emotional outcomes in Tunisian stroke survivors	Charfi, N., Elleuch, S., et al.	2021	Hospital Anxiety and Depression Scale	Tunisia
Quality of life and social support: Perspectives of Saudi Arabian stroke survivors	Alshahrani, A. M.	2020	World Health Organization QOL-BREF	Saudi Arabia

The table 2.1 provides a glimpse of the tools used in some key studies, high income countries studies use standardized and validated tools while the regional studies use more context specific tools, this shows the growing use of PROMs but in the same time points out the difference in PROMs tools selection and the need for more consistent measures for better comparison across settings.

2.4 Palestinian research on PROMs

In Palestine, there is a lack of literature about PROMs in general and PROMs for stroke patients in particular. A study was conducted in Gaza to evaluate relations between socio-demographic and disease-related characteristics, the burden of the symptoms and the QoL at outpatient services for cancer patients. By using PROMs, such as the Memorial Symptom Assessment Scale and the European Organization for Research and Treatment of Cancer QoL Questionnaire, this study showed the struggles of cancer patients in Gaza, as high symptom burden was identified, especially pain and psychological distress. This study highlights the importance of using PROMs to assess patient experiences and needs to develop patient-centered care strategies. Despite of its valuable insight this study was limited to cancer patients not stroke patients, and so the

study highlighted the need for more PROMs studies in Palestine (ElMokhallalati et al.2022)

Another study conducted in Istshari Arab hospital in Palestine to give an insight to ischemic stroke patients pathway during their hospital stay as they go through three stages the first one is hospital admission the second one is recanalization therapy and the third stage is inpatient treatment, staff-patient interactions were limited to single stage of care, continuity across stages was fragmented, which had an impact on patients satisfaction and could potentially affect their overall health . The study recommended further investigation and research of patient perceptions and experiences, which aligns with our study on the importance of what the patient reports and perceive to enhance the care process, and the need to asses PROMs to indicate the quality of healthcare services.(Karim et al., 2025)

We can see that there is limited research on PROMs in Palestine in general, and on stroke in specific but we can also see a growing recognition of PROMs as valuable tools for understanding patient centered outcomes and enhancing the quality of healthcare services in Palestine.

2.5 The Healthcare System in Palestine

The Palestinian health sector is comprised of four major health service providers: the Ministry of Health (MoH), the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), non-governmental organizations (NGOs), and for-profit providers. MoH provides the majority of health services, particularly basic and secondary care, through a network of government primary health care centers and hospitals. It also provides tertiary care and contracts services from other hospitals and medical centers, including non-profit Palestinian hospitals in East Jerusalem. The Palestinian healthcare system faces many challenges, such as The Israeli occupation, political divisions, territorial fragmentation, Gaza Strip siege, physical barriers to mobility, and the installation of a permission regime. (*World Health Organization (WHO)*, 2014.)

Also rising demand for medical services and the increase in referrals to neighboring. Between 1996 and 2018, referrals increased from 6,052 to 109,818. This increase is attributed to the limited availability of tertiary care services, a shortage of specialists, unequal distribution of healthcare staff, inadequate infrastructure and equipment, a lack of hospital beds for specialized care, and frequent shortages of essential medicines.(Harb, 2020)

Palestine has a total of 93 hospitals, collectively providing 6,900 beds. In the West Bank, there are 58 hospitals with 4,286 beds resulting a ratio of 1.3 beds per 1,000 inhabitants. Meanwhile, the Gaza Strip has 35 hospitals offering 2,614 beds, resulting in a ratio of 1.2 beds per 1,000 inhabitants.

The Ministry of Health in Palestine operates 31 hospitals In the West Bank, the Ministry runs 18 hospitals with a capacity of 1,948 bed, in the Gaza Strip, the Ministry oversees 13 hospitals with 2,011 beds.(MOH, 2022)

There is limited information available on stroke care in Palestine. Khatib et al. (2018) reported high rates of disability and mortality among stroke patients, with 12% dying during hospitalization—figures attributed to significant gaps in stroke care services. Such as lack of thrombolytic therapy, limited use of diagnostic imaging, insufficient use of anticoagulation therapy for atrial fibrillation, and a deficiency in training and rehabilitation. Furthermore, rather than being committed to specialized stroke units, stroke patients are admitted to general medical units, which leads to fragmented care and worse outcomes.

Habib et al.,(2022.) highlights the necessity of having a well-organized stroke unit in every hospital. A multidisciplinary stroke team comprising social workers, occupational therapists, physiotherapists, medical professionals, nurses, and speech therapists would assist this facility in order to improve patients' outcomes.

2.6 Summary

Patient-Reported Outcome Measures play an important role in improving stroke care and outcomes. Stroke is a global burden, especially in low- and middle-income countries such as Palestine. PROMs are important tools for patient-centered care, monitoring patient recovery, enhancing patients' outcomes, assessing satisfaction and

improving the quality of stroke services, and uncovering gaps that are missed by traditional clinical measures. There is a lack of research on PROMs in Palestine and studies report that stroke care is fragmented, studies recommend the use of PROMs to improve stroke patient outcomes and quality of care.

Chapter 3: Conceptual Framework

This chapter will present the conceptual framework that is applied in this study. It explains the theory that will be used to support the relationship among the dependent and independent variables along with their operational definitions

A conceptual framework is a structure that the researcher believes best reflects the natural development of the phenomenon under study. It is linked to the concepts, empirical research, and major theories that the researcher employs to structure and develop the data they represent. It is a justification that the researcher provides for the investigation of the research problem. The conceptual framework provides a thorough approach to the topic under investigation and makes it easier for the researcher to define and explain the ideas in the research (Grant & Osanloo, 2014)

3.1 Study's Framework: From Theory to Concept

The research framework will be mainly based on Patient-Reported Outcomes Information System (PROMIS), a fairly trending roadmap initiative that is increasingly attracting massive interest and recommendations within the contemporary healthcare scientific community associated with PROMs-related clinical studies (Churruca et al., 2021).

The PROMIS is a standardized, publicly available conceptual model that constitutes sophisticated and significant procedural evidence-based and value-based clinical research foundations. it serves as a standardized framework to help clinical researchers and other associated individuals overcome the prevailing complexities and challenges of executing PROMs clinical experiments (Churruca et al., 2021). It is a relatively advanced and wholly integrated conceptual model comprising the insights of Item Response Theory (IRT), Classical Time Theory (CTT), and Computerized Adaptive Testing (CAT). According to Fidai et al. (2018), the PROMIS initiative was principally intended to simplify the process of value-based clinical care based on the hybrid notions of IRT, CTT, and CAT theoretical foundations, both of which precisely emphasize the need for ideal and elaborated patient data collection and assessment regarding PROMs practices.

The initiative has been widely impactful in mitigating the confusions and adversities emerging from the application of other conventional PROMs investigation techniques in the clinical assessment, evaluation, documentation, and reporting of patients' PROMs data by medical practitioners and researchers (Churruca et al., 2021).

Based on the theory above, we visualised our study's framework (figure 3.1) to illustrate the main relationships between the dependent and independent variables. The framework was adapted from the PROMIS model with minor modifications to suit our research variables. .

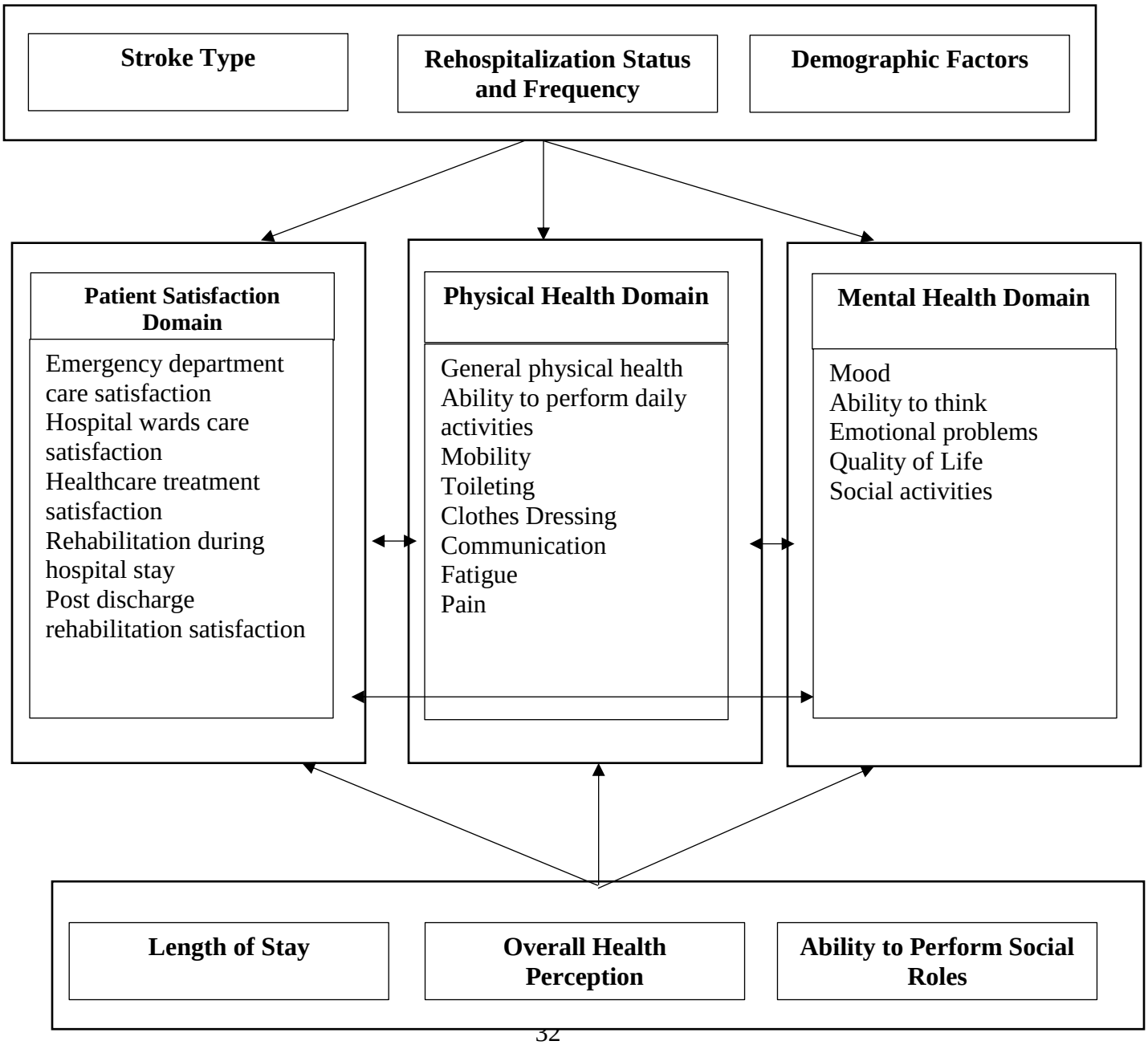

Figure 3.1. The Conceptual Framework of the Study

This study's Conceptual Framework presented the main concepts and visualized the main relationships between the dependent variables: patient satisfaction, mental health domain, and physical health domain, and the independent variables, as presented in the figure. The following section provides a more detailed description.

3.2 Study's Variables

Dependent Variables:

The dependent variables are patient's reported outcomes measures including:

1. *Patient's healthcare satisfaction domain:* includes emergency department care satisfaction, hospital wards care satisfaction, healthcare treatment satisfaction, rehabilitation during hospital stay satisfaction and post discharge rehabilitation satisfaction
2. *Mental health domain:* involves mood, ability to think, emotional problems, QoL, and social activities
3. *Physical health domain:* includes general physical health, ability to perform daily activities, mobility, toileting, clothes dressing, communication, Fatigue and Pain

Independent Variables:

Rehospitalization status (yes or no) and frequency, stroke type, length of hospital stays, perception of overall health, ability to perform social roles and activities and demographic factors (age, gender, socioeconomic status, hospital region and living arrangement).

3.3 Operational Definitions

- Age: participant's age in years, a numeric open-ended question.
- Gender: participant's gender (coded as: male = 1, female = 2).
- Hospital geographical region: central coded as 1, north coded as 2 and south coded as 3.
- Education level: measures the highest level of education completed, with 6 options: No formal education coded as 1, Primary school coded as 2, Secondary school coded as 3, Associate degree (2-year diploma) coded as 4, Bachelor's degree coded as 5 and Graduate degree (Master's or PhD) coded as 6.
- Stroke type: type of stroke experienced by the patient, with 3 options: Ischemic Stroke coded as 1, Hemorrhagic Stroke coded as 2 and Transient Ischemic Attack (TIA) coded as 3.
- Length of hospital stay, time between a patient's admittance and discharge at the hospital with 4 options: 0-7 days coded as 1, 8-14 days coded as 2, 15-30 days coded as 3 and more than 30 days coded as 4.
- Hospital readmission: being readmitted after discharge within 90 days Yes: coded as 1, No: coded as 0. If the answer is yes, the number of times the patient is readmitted is written as a numeric value.
- Hospital type: 2 options: Government hospital coded as 1 and Private hospital coded as 2.
- Health insurance: health insurance coverage 3 options: Government insurance coded as 1 Private insurance coded as 2 and No insurance coded as 3.
- Monthly income: in Shekels, with 4 options: 0-2000 Shekels coded as 1, 2001-4000 Shekels coded as 2, 4001-6000 Shekels coded as 3 and 6001 Shekels and above coded as 4.
- Living arrangement: current living status 5 options: Living alone coded as 1, Living with spouse coded as 2, Living with family coded as3, living with caregiver coded as 4 and living in care facility/nursing home coded as 5 .
- Patient satisfaction: a measure of how content a patient is with their healthcare a 5-point Likert scale (1: Very dissatisfied to 5: Very satisfied) for: Emergency room care,

in-patient Hospital ward care and treatment with Dignity and respect from healthcare providers.

- Rehabilitation: satisfaction with rehabilitation services using a 7-point scale:
  During hospital stay, after patient discharge (coded as 1: Very dissatisfied, 2: Dissatisfied, 3: Don't know, 4:I Needed rehab but didn't receive, 5: I Didn't need, 6: Satisfied, 7: Very satisfied), and an open-ended question of the place the patient received rehabilitation
- Functional recovery: assess functional status and abilities in:
  Mobility: independent mobility indoors/outdoors coded as 1, independent indoors only but not outdoors coded as2 , needs assistance indoor and outdoor coded as 3.
  Ability to use restroom: independent use coded as 1 and needs assistance coded as 2, Ability for dressing independent coded as 1 and needs assistance coded as 2, Feeding tube requirement: Yes coded as 1 and No coded as 0 and Communication problems Yes coded as 1 and No coded as 0.
- Patient-reported outcomes: using a 5-point scale (1: Poor to 5: Excellent) measures:
  Overall health, QoL, Physical health, mood, ability to think, Satisfaction with social relationships, Social role performance and ability to perform Physical activities (5-point scale: Not at all to Completely).
- Psychological wellbeing: measures: frequency of Emotional problems (5-point scale: Never to Always), Fatigue level (5-point scale: None to Very severe) and Pain level (11-point scale: 0 to 10).

To follow the full list of questions, please follow Appendix A.

3.4 Summary

This chapter explains the conceptual framework that outlines the relationships between key variables in stroke management. This framework emphasizes patient-centered care, highlighting the importance of considering patient-reported outcomes domains along with all the previously mentioned independent variables.

Chapter 4: Materials and Methods

4.1 Introduction

This chapter will outline the research methodology, detailing the study design, setting, population and sample, instruments, data collection, data analysis and ethical consideration.

4.2. Study Design

A retrospective cross-sectional study design study conducted between June and September 2024 was used in this research, combining medical record review and interviewer-administered questionnaire for data collection, more details will be presented later in this chapter.

4.3 Study Setting

The study was conducted in 12 public hospitals across the West Bank, Palestine, in 2024. The participating hospitals are from different geographical regions as follows: **Northern Region Hospitals** (6 hospitals), **Central Region Hospitals** (2 hospitals) and **Southern Region Hospitals** (4 hospitals).

4.4 Population and Sample Size

Target Population:

Patients who were admitted for stroke in Palestinian hospitals 90 days before the data collection period began.

The period of 90 days post stroke was chosen as it's considered a critical time window for rehabilitation(Dromerick et al., 2021), as there is the protentional for repairment and recovery of the brain (Baker et al., 2022) The degree of disability at 90 days is a reliable independent indicator of both long-term functional outcome and survival. (Magalhães et al., 2014)

Sample Size

The sample size in our study is 100 stroke patients distributed among 12 governmental hospitals grouped by region: **North** (Jenin Governmental Hospital, Al Watani Hospital in Nablus, Dr. Darwish Nazal Governmental Hospital in Qalqilia, Martyr Dr. Thabet Thabet Governmental Hospital in Tulkarem, Tubas Turkish Governmental Hospital and Martyr Yasser Arafat Governmental Hospital in Salfeet), **Central** (Palestine Medical Complex in Ramallah and Jericho Governmental Hospital), and **South** (Alia Hospital in Hebron, Beit Jala Governmental Hospital Dura Governmental Hospital and President Mahmoud Abbas Government Hospital in Halhoul) who were treated for stroke ninety days prior to data collection as seen in table 4.1

Table 4.1 Study Sample Distribution Across Regions in the West Bank

Region	**Number of Cases (%)**
Northern West Bank	47 (47%)
Central West Bank	29 (29%)
Southern West Bank	24 (24%)
Total	**100 (100%)**

The ministry of health provided the researcher, lists with 303 stroke patients admitted due to stroke 90 days prior to data collection, after reviewing their medical records the final sample size was 100 due to several factors influenced the final sample size. 18 patients declined to participate as they were not interested in participation, 34 had died within 90 days of the stroke, and 151 patients had incomplete information in their medical records or could not be contacted and so were excluded. And so, 100 patients completed the questionnaire, with a response rate of 84.75% of the total population after excluding participants who have died and those whose data are incomplete.

4.4.1 Sampling Technique

Convenience sampling with exclusion to patients who have died and those whose data are incomplete. As all the 303 patients were attempted to be included. But only 100 patients were successfully included in our study.

4.4.2 Inclusion and Exclusion Criteria

Inclusion Criteria:

1. Patients diagnosed with a stroke and received medical treatment 90 days prior to data collection.
2. Stroke patients aged 18 years or older.

Exclusion Criteria:

1. Patients with incomplete medical records.
2. Patients with missing data in the medical records.

4.5 Data Collection Instrument

The research questionnaire was built from three sources: the Swedish Stroke Registry (RIKSSTROKE), the Patient-Reported Outcomes Measurement Information System Global Health (PROMIS-10), and the International Consortium for Health Outcomes Measurement (ICHOM) Standard Set for Stroke as noted in Appendix B.

The final questionnaire was designed to contain the key variables for demographics, patient satisfaction, rehabilitation experiences, functional recovery, patient reports, and psychological well-being. The questionnaire sections are described below and are detailed with their resources in appendix B:

First section: contains demographic factors and clinical factors, which are age, gender, hospital area education level and stroke type. length of hospitalization,

readmission history, type of hospital (private or public), insurance coverage, socioeconomic status (monthly income), and living arrangements.

Second section: patients' healthcare satisfaction, by measuring patients' satisfaction with: experience with emergency care, hospital ward care, and how clinicians dealt with patients' dignity and respect related to stroke. These are ranked according to a 5-point Likert scale, which is considered a reliable indicator of the satisfaction.

Third section: addresses the recovery process and evaluates satisfaction with both inpatient and outpatient rehabilitation. This section's scale of measurements was carefully designed to accommodate patients in all sorts of circumstances – including those who did not or did not receive rehabilitation.

The fourth section: evaluates functional recovery based on five indicators: Mobility status, toilet independence, dress function, feeding tube use, and speech ability. This section uses a mix of yes or no questions and multiple-choice responses to correctly report functional status.

The fifth section: is focused on patient-reported measures across eight domains, including general health, QoL, physical and mental health, social functioning ability and satisfaction, and physical functioning. The majority are 5-point Likert scale items, with one item geared towards physical functioning and using a unique 5-point answer scale.

The last section: examines psychological functioning by looking at three indicators — the amount of emotional distress, the extent of fatigue, and pain intensity. This section incorporates different scales for measuring pain, including a numerical scale of pain sensitivity from 0 to 10, to capture the full spectrum of psychological effects.

The questionnaire was drafted in Arabic and English to ensure its availability and validity in our intended audience. The full questionnaire is available as appendix A

4.6 Questionnaire Validation and Reliability

The survey instrument was derived from three established sources: the Swedish Stroke Registry (RIKSSTROKE) (Asplund et al., 2011), the Patient-Reported Outcomes Measurement Information System Global Health (PROMIS-10) (Hays et al., 2009), and selected outcome measures recommended by the International Consortium for Health Outcomes Measurement (ICHOM) Standard Set for Stroke (Salinas et al., 2016).

RIKSSTROKE is a validated national quality registry for stroke care, PROMIS-10 is a validated patient-reported outcome measure developed by the National Institutes of Health. The ICHOM Standard Set for Stroke represents an internationally agreed-upon set of outcome measures for stroke care, developed through expert consensus.

The final version of the questionnaire was established by seven experts from different specialties (content validity), as they evaluated the questionnaire that was sent to them by structured evaluation tables, items were evaluated for clarity, relevance, and comprehensiveness, eight new questions were added such as length of hospital stay, income level and education level, details on the validation expert panel can be found in appendix C.

Piloting: The questionnaire was pilot-tested before being used on 11 patients who fulfilled the criteria of the target population to assess the questionnaire's clarity, feasibility, and reliability. More details are provided in the reliability analysis section. Moreover, a training was done for the one data collector to assure consistency when administering the questionnaire, to minimize interviewer bias, and to enhance recording responses accuracy. The data collector was given detailed instructions on how to collect data, how to perform interviews and how to handle any patient inquiries.

4.7 Data collection:

The researcher was provided by the ministry of health with lists of all patients who had stroke in march and April 2024. The data collection process took place between June and September 2024.

The 12 hospitals represent different geographical areas in order to cover for south, north and center of Westbank at Palestine. Unfortunately, the researcher was unable to get permission to do the research at the private hospitals. The 12 public hospitals are coded instead of using their real name for ethical considerations.

The researcher and a data collector completed 100 questionnaires via examining patients' medical record and by interviewer-administered questionnaire each patient was introduced to the research, responses were collected and each questionnaire was given a serial number from 1 to 100.

4.8 Statistical Analyses

Data Preparation and Variable Recoding

Prior to analysis, several variables were recoded to ensure consistency and appropriate scaling. The satisfaction assessment items (ps4 and ps5) were recoded from a 7-point scale to a 5-point scale, with responses 4 and 5 (indicating non-receipt of needed rehabilitation and lack of rehabilitation need, respectively) consolidated as neutral responses. Physical functioning items were standardized to a consistent 5-point scale: mobility assessment (ph3) was recoded from a 3-point to a 5-point scale, with independent movement scored highest. Binary items for activities of daily living (ph4-ph7) were recoded with 'independent/no difficulty' assigned the highest score (5) and 'needs assistance/has difficulty' assigned the lowest score (1). Pain assessment (ph9) was recoded from an 11-point (0-10) to a 5-point scale, with lower pain levels receiving higher scores. For mental health and fatigue items (mh3 and ph8), reverse coding was applied to maintain consistency where higher scores indicate better outcomes.

Domain-specific raw scores were then computed by summing the relevant items. As the following:

$$PS_{raw} = PS1 + PS2 + PS3 + PS4 + PS5$$

$$PH_{raw} = PH1 + PH2 + PH3 + PH4 + PH5 + PH6 + PH7 + PH8 + PH9$$

$$MH_{raw} = MH1 + MH2 + MH3 + MH4 + MH5$$

Subsequently, the raw scores were standardized by first computing Z-scores:

$$Z = \frac{Raw\ Score - Mean\ Raw\ Score}{Standard\ Deviation\ of\ Raw\ Scores}$$

Then converting these into T-scores using: $T = 50 + (Z \times 10)$

This transformation yields sample-specific standardized scores with a mean of 50 and a standard deviation of 10.

Knowing that the **patient satisfaction domain** includes the following questions:

- How satisfied or dissatisfied are you with the care you received in the Emergency room in connection with your stroke? Ps1
- How satisfied or dissatisfied are you with the care you received in the Hospital wards in connection with your stroke? Ps2
- How satisfied or dissatisfied are you with the way healthcare providers dealt with you regarding dignity and respect in connection with your stroke? Ps3
- How satisfied or dissatisfied are you with the rehabilitation or training (to improve your life such as using the toilet, bathing, mobility, etc.) while hospitalized in connection with your stroke? Ps4
- How satisfied or dissatisfied are you with the rehabilitation or training after you were discharged from the hospital for your stroke? Ps5

Mental health domain questions:

- In general, how would you rate your mental health, including your mood? MH1
- In general, how would you rate your mental health, including your ability to think?MH2
- How often have you been bothered by emotional problems such as feeling anxious, depressed, or irritable?MH3
- In general, would you say your QoL is?MH4

- In general, how would you rate your satisfaction with your social activities and relationships?MH5

Physical health domain:

- In general, how would you rate your physical health? PH1
- To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?PH2
- How is your mobility now? PH3
- Do you need help from someone to visit the toilet?PH4
- Do you need help getting dressed and undressed?PH5
- Do you need a tube for feeding?PH6
- Do you have a problem with communication or understanding?PH7
- How would you rate your fatigue on average?PH8
- How would you rate your pain on average?PH9

Reliability Assessment and T-Score Calculation

Internal consistency reliability was evaluated using Cronbach's alpha for each PROMs domain after recoding. The three PROMs domains; Patient Satisfaction, Physical Health, and Mental Health, were then standardized using sample-specific T-scores. These scores were calculated. This approach yielded scores with a standardized mean of 50 and standard deviation of 10, centered on the study sample rather than PROMs population norms. This sample-specific standardization was chosen to better reflect the unique context of Palestinian stroke patients and healthcare system.

Most published PROMs T-scores such as PROMIS are norm-referenced; a score of 50 always represents the mean of the reference population; typically large, English-speaking samples drawn from the United States or Western Europe. Anchoring our data to those external norms would imply that Palestinian stroke survivors are being compared to:

- health-system settings with universal post-stroke rehabilitation pathways,

- markedly different socioeconomic conditions,
- English source versions of the instruments
- stroke cohorts whose average severity, comorbidity profile, and time-since-stroke differ from this study

Because none of those assumptions holds in our context, we instead centered each domain on the mean and SD of our cohort.

That decision serves three purposes as presented in table 4.3:

Table 4.3: Rationale for Study-Based Norms

Reason	Implication
Cultural and linguistic fit Arabic translation and response styles can shift item difficulty and endorsement; i.e., subtle wording shifts can change the meaning or emotional weight of an item.	Using outside norms could inflate or deflate scores purely because of translation or culture-bound wording, not true health differences.
Health-system realities Palestinian hospitals have different post-stroke care pathways (e.g., limited inpatient rehabilitation beds, heavier reliance on family caregiving).	External norms benchmark performance against services our patients never receive, making our cohort look "worse" by definition.
Clinical mix and severity This sample is older (mean 63 years), mostly ischemic (74%), and assessed uniformly at 90 days.	Published norms usually pool acute, sub-acute, and community samples; severity mix changes domain means by several T points.

Sample-specific T-scores give clinicians and policymakers a locally meaningful yardstick; a patient at T = 40 is one SD below the Palestinian stroke average. Actionable information for setting realistic goals and allocating scarce rehabilitation resources.

Statistical Procedures

All analyses were conducted using R programming language (version 4.4.2). Initial analyses included descriptive statistics for demographic variables. For continuous variables such as age, means and standard deviations were calculated, with median and interquartile ranges (IQR) used for non-normally distributed data. Categorical variables including gender, stroke type, education, and income levels were summarized using frequencies and percentages.

The normality of distributions was assessed using Shapiro-Wilk tests and Q-Q plots. Based on the ordinal nature of the original measures and non-normality of the transformed scores, non-parametric tests were employed. Mann-Whitney U tests were employed to examine differences in PROMs dimensions across binary variables including rehospitalization status (yes/no) and gender. The Kruskal-Wallis test was used to assess differences across multiple categorical variables including number of readmissions (0-3 times), age categories (18-44, 45-64, 65+), educational levels (no formal education through postgraduate degree), income levels (0-2000 through 6001+ Shekels), and stroke types (Ischemic, Hemorrhagic, TIA). For correlation analyses between PROMs dimensions, Kendall's rank correlation was utilized. Statistical significance was set at $p < .05$ for all analyses.

Statistical significance was set at $p < .05$ for all analyses. Results for each analysis were presented with appropriate test statistics (W for Mann-Whitney U tests, χ^2 for Kruskal-Wallis tests, τ for Kendall's rank correlation) and their corresponding p-values.

Reliability Analysis

Internal consistency reliability analyses were conducted for each PROMs dimension and the complete measure as shown in Table 4.4 Patient Satisfaction dimension (5 items) demonstrated acceptable internal consistency ($\alpha = .71$) with moderate inter-item correlation (AIC = .33). Physical Health dimension (9 items) showed strong internal consistency ($\alpha = .88$) and good inter-item correlation (AIC =

.46). The Mental Health dimension (5 items) also exhibited good internal consistency (α = .80) with adequate inter-item correlation (AIC = .44).

Analysis of all 19 items collectively revealed excellent overall internal consistency (α = .89). While the average inter-item correlation for the complete measure (AIC = .28) was lower than individual dimensions, it remained within the optimal range suggested by Clark and Watson (1995). According to their guidelines, optimal AICs typically range from .15 to .50, with lower values appropriate for broader constructs and higher values for narrowly defined constructs. The observed AICs in this study (.28–.46) fall within this midrange, suggesting an appropriate balance between item interrelatedness and distinctiveness.

These reliability coefficients support the psychometric integrity of both individual PROMs dimensions and the overall measure for assessing patient-reported outcomes in stroke patients. The pattern of internal consistency and inter-item correlations indicates that the items within each dimension are sufficiently related while maintaining their unique contribution to the measurement of their respective constructs.

Table 4.4: Reliability Analysis of the PROMs Dimensions

Dimension	Number of Items	Cronbach Alpha (α)	Average Inter Item Correlation (AIC)
Patient Satisfaction	5	0.71	0.33
Physical Health	9	0.88	0.46
Mental Health	5	0.80	0.44
All Dimensions	**19**	**0.89**	**0.28**

4.9 Ethical Considerations

The researcher obtained permission to conduct this research from the American Arab University, the institutional review board code number “R-2024/A/58/N”
and the Palestinian Ministry of Health which provided a signed written document sent by email (Approval No.: 162/1045/2024, date: 20/5/2024) A consent form was

attached to each questionnaire in which participants were informed that participation was optional, they had the right to not answer any question, and that the collected data would be used with high confidentiality and only for the stated research purposes. See Appendix A

4.10 Summary

This chapter addressed the methodology of this study, the study design, study setting, population, and sample size. Data collection instrument, data collection methods, analysis, and ethical considerations were presented.

Chapter 5: Results and Discussion

This chapter illustrates the statistical analysis of the information gathered from the study. The demographics of the participants are discussed first, followed by the findings of the three Patient-Reported Outcome Measures (PROMs) dimensions, the correlation analysis among the PROMs dimensions, and the examination of the relationships between these dimensions and the independent variables. This provides a comprehensive understanding of the factors that influence patient outcomes.

5.1 Sample Characteristics

The study included 100 stroke patients with a mean age of 63.2 years (SD = 13.2). The sample comprised predominantly male participants (n = 66, 66.0%) compared to female participants (n = 34, 34.0%). Regarding educational background, the majority of participants had completed either primary school (n = 30, 30.0%) or secondary education (n = 33, 33.0%), while 16.0% (n = 16) had no formal education. A smaller proportion held associate degrees (n = 9, 9.0%), bachelor's degrees (n = 9, 9.0%), or postgraduate degrees (n = 3, 3.0%).

Ischemic stroke was the most common diagnosis (n = 74, 74.0%), followed by hemorrhagic stroke (n = 15, 15.0%) and transient ischemic attack (TIA; n = 11, 11.0%). Most participants reported monthly incomes in the lower brackets, with 56.0% (n = 56) earning 0-2000 Shekels and 32.0% (n = 32) earning 2001-4000 Shekels. Only a small percentage earned 4001-6000 Shekels (n = 10, 10.0%) or more than 6001 Shekels (n = 2, 2.0%).

The majority of participants lived with family (n = 85, 85.0%), while smaller proportions lived with a spouse (n = 12, 12.0%) or alone (n = 3, 3.0%). No participants reported living with a caregiver or in a care home. Hospital length of stay was predominantly 0-7 days (n = 76, 76.0%), with decreasing frequencies for longer stays: 8-14 days (n = 14, 14.0%), 15-30 days (n = 6, 6.0%), and more than 30 days (n = 4, 4.0%). As shown in Table 5.1.

Table 5.1: Demographic and Socioeconomic Characteristics of the Study Sample

Demographic Characteristic	Category	Frequency (%)
Gender	Male	66 (66.0%)
	Female	34 (34.0%)
Educational Level	No formal education	16 (16.0%)
	Primary school	30 (30.0%)
	Secondary education	33 (33.0%)
	Associate degree	9 (9.0%)
	Bachelor's degree	9 (9.0%)
	Postgraduate degree	3 (3.0%)
Type of Stroke	Ischemic Stroke	74 (74.0%)
	Hemorrhagic Stroke	15 (15.0%)
	Transient Ischemic Attack (TIA)	11 (11.0%)
Monthly Income	0-2000 Shekels	56 (56.0%)
	2001-4000 Shekels	32 (32.0%)
	4001-6000 Shekels	10 (10.0%)
	6001 and more	2 (2.0%)
Living Arrangement	Living alone	3 (3.0%)
	Living with spouse	12 (12.0%)
	Living with family	85 (85.0%)
	Living with caregiver	0 (0.0%)
	Living in care home	0 (0.0%)
Hospital Length of Stay	0-7 days	76 (76.0%)
	8-14 days	14 (14.0%)
	15-30 days	6 (6.0%)
	More than 30 days	4 (4.0%)
	Mean (SD)	
Age	Mean ± SD: 63.2 ± 13.2	

- Categorical variables are presented as frequencies (percentages).
- Continuous variables are presented as mean ± SD or median (IQR), as appropriate based on normality tests.

5.2 Positive Perception Rates Across Care Dimensions

Regarding ***Patient Satisfaction***, 71.0% percent of respondents reported being satisfied with the care they received in the emergency room for stroke, while satisfaction with hospital ward care was slightly higher at 79.0%. A very high

percentage (84.0%) felt that they were treated with respect, reflecting a positive perception of the interpersonal aspects of care. However, satisfaction regarding rehabilitation services received during the hospital stay was notably lower (28.6%), contrasting with a much higher 75.5% satisfaction rate for rehabilitation after hospital discharge.

For ***Mental Health***, the perception of well-being was less favorable. Only 10.0% of participants rated their mood as Excellent or Very Good. When considering the cognitive aspect of mental health, 35.0% reported positive ratings for their ability to think clearly. Furthermore, just 21.0% of respondents perceived that they experienced infrequent emotional problems (with this item reversed to indicate a positive outcome), and only 20.0% reported a high QoL overall. Satisfaction with social activities was the lowest, with a mere 15.0% expressing favorable perceptions.

In terms of ***Physical Health***, the responses to the its items indicate a mixed perception of patients' current physical status. Only 14.0% reported positive overall physical health and just 11.0% felt they were capable of performing physical activities independently. On a more specific note, 53.0% expressed satisfactory mobility at the time of the survey. Assistance needs showed some variability: 70.0% of the respondents acknowledged receiving adequate help for using the toilet, and 68.0% for dressing. A striking 94.0% reported favorable perceptions regarding feeding tube support, suggesting that almost all participants perceived no need for the tube, and 80.0% noted that their communication needs were appropriately met. Meanwhile, only a minority reported low levels of fatigue (17.0%) and pain (23.0%) after reversing or recoding these items to reflect positive health outcomes. As shown in table 5.2

Table 5.2. Percentage of Participants Reporting Positive Perceptions in Each Item Across Dimensions

Dimension	Item	Percent Reporting Positive Perceptions (%)
Patient Satisfaction	Satisfaction with ER Care	71.0%
	Satisfaction with Hospital wards Care	79.0%
	Satisfaction with Treatment Respect	84.0%
	Rehabilitation During Hospital Stay	28.6%
	Rehabilitation After Hospital Discharge	75.5%

Physical Health	Physical Health	14.0%
	Ability to Perform Physical Activities	11.0%
	Mobility Now	53.0%
	Assistance for Using Toilet	70.0%
	Assistance for Dressing	68.0%
	Feeding Tube	94.0%
	Communication Problems	80.0%
	Level of Fatigue (*reversed*)	17.0%
	Level of Pain (*recalculated*)	23.0%
Mental Health	mental health (mood)	10.0%
	Mental Health (ability to think)	35.0%
	Frequency of Emotional Problems (*reversed*)	21.0%
	Quality of Life	20.0%
	Satisfaction with Social Activities	15.0%

Note: For both rehabilitation items, percentages are based only on patients who received rehabilitation, excluding those who did not.

5.3 Correlation Analysis Among the Three PROMs Dimensions (Patient Satisfaction, Physical Health, and Mental Health)

The relationships among the three dimensions of the PROMs (Patient Satisfaction, Physical Health, and Mental Health) were analyzed after T-score standardization transformation (Mean = 50, SD = 10), using Kendall's rank correlation to account for the high prevalence of tied values in the data. The findings revealed a mix of significant and non-significant associations among these dimensions.

Such that, Kendall's Tau (τ) is a non-parametric measure of association that evaluates the strength and direction of the relationship between two variables based on their ranks. It is robust to tied values and ideal for ordinal or non-normally distributed data and for non-linear relationships. Tau values range from -1 (perfect negative relationship) to +1 (perfect positive relationship), with $\tau = 0$ indicating no association.

The analysis revealed varying degrees of association between the three dimensions. Physical Health and Mental Health demonstrated a significant moderate positive correlation ($\tau = 0.58$, $p < .001$), indicating that higher physical health scores were associated with better mental health outcomes within this sample of Palestinian stroke patients.

However, Patient Satisfaction showed no significant correlation with either Physical Health ($\tau = 0.06$, $p = .405$) or Mental Health ($\tau = 0.10$, $p = .172$), suggesting that patients' satisfaction with their healthcare experience does not directly correlate with their self-reported physical or mental health outcomes after 90 days. As indicated in Table 5.3.

Table 5.3: Correlation Between PROMs Dimensions: Patient Satisfaction, Physical Health, and Mental Health

Relationship	Correlation Coefficient (τ) (P-Value)	Interpretation
Patient Satisfaction and Physical Health	0.06 (0.405)	No significant relationship
Physical Health and Mental Health	0.58 (0.000)*	Significant positive relationship
Patient Satisfaction and Mental Health	0.10 (0.172)	No significant relationship

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kendall's rank correlation was used to assess the relationship between PROM dimensions.

Graphical Analysis

The scatter plots (Figures 5.1-3) confirm these relationships. Figure 1 and Figure 2 display considerable dispersion around trend lines, revealing weak pattern of associations. However, Figure 3 which demonstrates the relationship between Physical Health and Mental Health T-scores, showing the strongest linear correlation with a clear positive trend.

The reference line at T-score = 50 in each plot represents the sample mean, reflecting the study's context-specific standardization approach for Palestinian stroke patients.

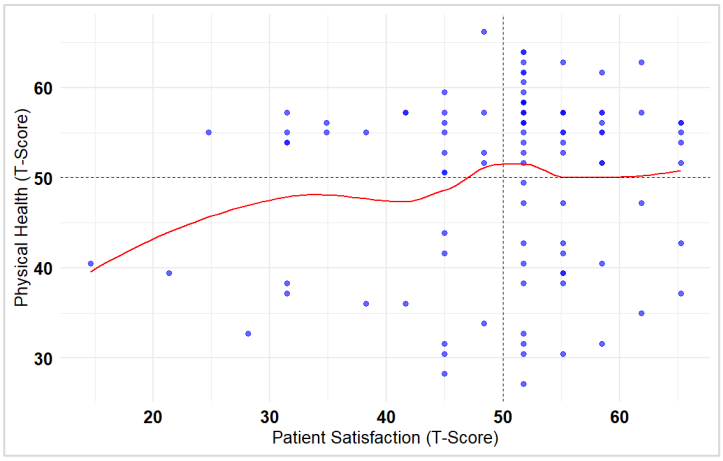

Figure 5.1: Scatterplot with LOESS Curve and Sample Mean Reference Lines: Patient Satisfaction vs. Physical Health

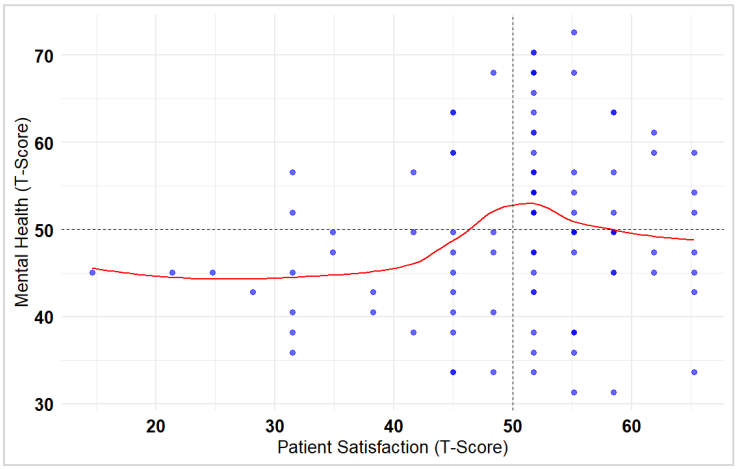

Figure 5.2: Scatterplot with LOESS Curve and Sample Mean Reference Lines: Patient Satisfaction vs. Mental Health

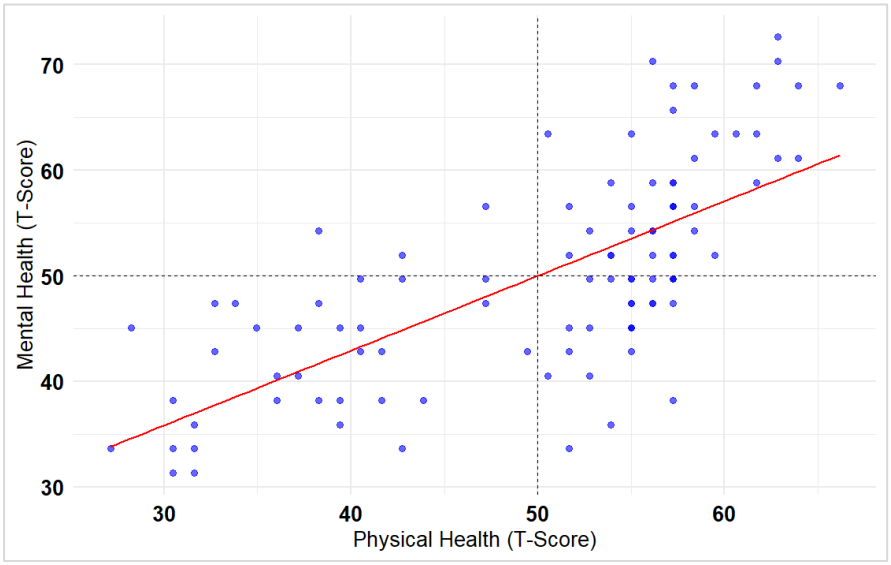

Figure 5.3: Scatterplot with Linear Regression and Sample Mean Reference Lines: Physical Health vs. Mental Health

5.4Relationship Between Rehospitalization Status and PROMs Dimensions

A Mann-Whitney U test was conducted to examine differences in PROM dimensions between patients who were and were not re-hospitalized. For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant difference between non-re-hospitalized patients (Mdn = 51.8, Q1–Q3 = 45.0–56.0) and re-hospitalized patients (Mdn = 51.8, Q1–Q3 = 45.0–52.6), W = 1200.5, p = .134, indicating similar satisfaction levels with care regardless of rehospitalization status.

Mental Health scores also showed significant differences, W = 1380.5, p = .004. Non-re-hospitalized patients reported better mental health (Mdn = 49.7, Q1–Q3 = 45.1–58.9) compared to re-hospitalized patients who reported poorer mental health (Mdn = 45.1, Q1–Q3 = 38.2–52.0).

Physical Health scores differed significantly between groups, W = 1379.0, p = .004. Non-re-hospitalized patients reported better physical health (Mdn = 55.0, Q1–Q3 = 47.2–57.3) compared to re-hospitalized patients who reported poorer physical health (Mdn = 44.4, Q1–Q3 = 34.4–55.3). As shown in table 5.4

Note: The sample included 71 non-rehospitalized patients and 29 rehospitalized patients.

Table 5.4: Relationship Between Rehospitalization Status (Yes/No) and PROMs Dimensions

Dimension	Rehospitalization Status	Median (Q1 - Q3)	W Statistic (P_Value)
Patient Satisfaction	No	51.8 (45.0 – 56.8)	1223.0 (0.136)
	Yes	51.8 (45.0 – 51.8)	
Physical Health	No	55.0 (47.2 - 57.3)	13784.5 (0.007)
	Yes	47.2 (34.9 – 56.1)	
Mental Health	No	49.7 (45.1 - 58.9)	1410.5 (0.004)*
	Yes	45.1 (38.2 - 52.0)	

Number of cases per Rehospitalization Status category: Rehospitalized: 29, Non-Rehospitalization: 71.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Mann-Whitney U test was used to compare the T-scores between patients who were rehospitalized and those who were not.

5.5 Relationship Between Number of Readmissions and PROMs Dimensions

A Kruskal-Wallis test examined differences in PROM dimensions across readmission frequencies (zero times, once, and 2 or more times). For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant differences across readmission frequencies, $\chi^2 = 2.8$, $p = .247$, with all groups showing similar satisfaction levels (Mdn = 51.8, with varying interquartile ranges).

Mental Health scores also showed significant differences across readmission groups, $\chi^2 = 8.3$, $p = .016$. Patients with no readmissions reported the best mental health (Mdn = 49.7, Q1–Q3 = 45.1–58.9), followed by those readmitted once (Mdn = 45.1, Q1–Q3 = 37.6–52.0), while patients with two or more readmissions reported the poorest mental health (Mdn = 43.9, Q1–Q3 = 39.9–49.1).

Physical Health scores demonstrated significant differences across readmission groups, $\chi^2 = 8.4$, $p = .015$. Patients with no readmissions reported the best physical health (Mdn = 55.0, Q1–Q3 = 47.2–57.3), while those readmitted once (Mdn = 45.0, Q1–Q3 = 34.4–55.6) or two or more times (Mdn = 44.4, Q1–Q3 = 35.2–53.6) reported poorer physical health. As shown in table 5.5.

Note: The sample included 71 patients with no readmissions, 20 patients with one readmission, and 9 patients with two or more readmissions.

Table 5.5: Relationship Between the Number of Times Readmitted (0 - 2 or more times) and PROMs Dimensions

Dimension	Readmission Times	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	2 or more times	51.8 (38.3 - 51.8)	2.7 (0.265)
	Once	51.8	

Table 5.5: Relationship Between the Number of Times Readmitted (0 - 2 or more times) and PROMs Dimensions

Dimension	Readmission Times	Median (Q1 - Q3)	χ^2 (P_Value)
		(45.0 - 55.1)	
	Zero times	51.8 (45.0 - 56.8)	
Physical Health	2 or more times	47.2 (36.1 – 56.1)	7.4 (0.025)*
	Once	45.0 (34.4 - 55.6)	
	Zero times	55.0 (47.2 - 57.3)	
Mental Health	2 or more times	45.1 (40.5 – 47.4)	8.5 (0.015)*
	Once	45.1 (37.6 - 52.0)	
	Zero times	49.7 (45.1 - 58.9)	

Number of cases per readmission category: Zero times: 71, Once: 20, 2 or more times: 9.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of times readmitted (0–3).

5.6 Relationship Between Age Categories and PROMs Dimensions

A Kruskal-Wallis test was conducted to examine differences in PROMs dimensions across three age categories (18-44 years, 45-64 years, and 65+ years). For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction scores did not reach statistical significance across age groups, $\chi^2 = 6.0$, $p = .050$. Middle-aged adults (45-64 years) reported the highest satisfaction with care (Mdn = 55.1, Q1–Q3 = 48.4–58.5), compared to younger adults (Mdn = 50.1, Q1–Q3 = 48.4–51.8) and elderly patients (Mdn = 51.8, Q1–Q3 = 45.0–51.8).

Mental Health scores also demonstrated significant age-related differences, $\chi^2 = 8.7$, $p = .013$. Younger adults reported the best mental health (Mdn = 65.7, Q1–Q3 = 63.4–68.0), while middle-aged adults (Mdn = 49.7, Q1–Q3 = 45.1–56.6) and elderly patients (Mdn = 47.4, Q1–Q3 = 40.5–54.3) reported progressively poorer mental health.

Physical Health scores differed significantly across age categories, $\chi^2 = 14.8$, $p = .001$. Younger adults reported the best physical health (Mdn = 62.3, Q1–Q3 = 60.0–63.7), followed by middle-aged adults (Mdn = 55.0, Q1–Q3 = 51.7–57.3), while elderly patients reported the poorest physical health (Mdn = 50.6, Q1–Q3 = 38.3–56.1). As shown in table 5.6

Note: The sample included 6 younger adults (18-44 years), 45 middle-aged adults (45-64 years), and 49 elderly patients (65+ years).

Table 5.6: Relationship Between Age Categories and PROMs Dimensions

Dimension	Age Category	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	18-44 (Younger)	50.1 (48.4 - 51.8)	6.0 (0.050)
	45-64 (Middle-aged)	55.1 (48.4 - 58.5)	
	65+ (Elderly)	51.8 (45.0 - 51.8)	
Physical Health	18-44 (Younger)	62.3 (60.0 - 63.7)	14.8 (0.001)*
	45-64 (Middle-aged)	55.0 (51.7 - 57.3)	
	65+ (Elderly)	50.6 (38.3 - 56.1)	
Mental Health	18-44 (Younger)	65.7 (63.4 - 68.0)	8.7 (0.013)*
	45-64 (Middle-aged)	49.7 (45.1 - 56.6)	
	65+ (Elderly)	47.4 (40.5 - 54.3)	

Number of cases per age category: Younger: 6, Middle-aged: 45, Elderly: 49.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.
Kruskal-Wallis test was used to compare the T-scores across different categories of age.

5.7 Relationship Between Gender and PROMs Dimensions

A Mann-Whitney U test was conducted to examine gender differences in PROMs dimensions. For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant difference between males (Mdn = 51.8, Q1–Q3 = 45.0–55.1) and females (Mdn = 51.8, Q1–Q3 = 48.4–55.1), W = 1044.5, p = .569, indicating similar satisfaction levels with care across genders.

Mental Health scores showed no significant difference between genders, W = 1344.0, p = .106, though male patients (Mdn = 49.7, Q1–Q3 = 45.1–58.3) reported somewhat better mental health compared to female patients (Mdn = 47.4, Q1–Q3 = 41.1–54.3).

Physical Health scores were significantly different between genders, W = 1489.5, p = .007. Male patients reported better physical health (Mdn = 55.0, Q1–Q3 = 43.9–57.3) compared to female patients (Mdn = 50.0, Q1–Q3 = 39.7–53.9). As shown in table 5.7.

Note: The sample included 66 male patients and 34 female patients.

Table 5.7: Relationship Between Gender and PROMs Dimensions

Dimension	Gender	Median (Q1 - Q3)	W Statistic (P_Value)
Patient Satisfaction	Male	51.8 (45.0 - 55.1)	1044.5 (0.569)
	Female	51.8 (48.4 - 55.1)	
Physical Health	Male	55.0 (43.9 - 57.3)	1489.5 (0.007)*
	Female	50.0 (39.7 - 53.9)	
Mental Health	Male	49.7 (45.1 - 58.3)	1344.0 (0.106)
	Female	47.4 (41.1 - 54.3)	

Number of cases per gender category: Male: 66, Female: 34.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Mann-Whitney U test was used to compare the T-scores between gender groups.

5.8 Relationship Between Educational Level and PROMs Dimensions

A Kruskal-Wallis test was conducted to examine differences in PROMs dimensions across educational levels. For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant differences across educational levels, $\chi^2 = 1.8$, $p = .615$, with all groups showing similar satisfaction levels (Mdn = 51.8, with varying interquartile ranges).

Mental Health scores showed no statistically significant differences across educational levels, $\chi^2 = 6.1$, $p = .105$. However, participants with higher education tended to report better mental health (Mdn = 56.6, Q1–Q3 = 45.1–63.4) compared to those with no formal education (Mdn = 49.7, Q1–Q3 = 42.8–54.3), primary school education (Mdn = 47.4, Q1–Q3 = 40.5–51.4), and secondary education (Mdn = 52.0, Q1–Q3 = 45.1–56.6).

Physical Health scores did not reach statistical significance, $\chi^2 = 7.6$, $p = .055$. A trend was observed where participants with higher education reported better physical health (Mdn = 57.3, Q1–Q3 = 52.8–58.4) compared to those with no formal education (Mdn = 48.3, Q1–Q3 = 40.5–55.3), primary school education (Mdn = 51.7, Q1–Q3 = 37.5–56.1), and secondary education (Mdn = 55.0, Q1–Q3 = 41.6–57.3). As shown in table 5.8

Note: The sample included 16 participants with no formal education, 30 with primary school education, 33 with secondary education, and 21 with higher education.

Table 5.8: Relationship Between Educational Level and PROMs Dimensions

Dimension	Educational Level	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	No formal education	51.8 (45.0 - 55.1)	1.8 (0.615)
	Primary school	51.8 (45.0 - 58.5)	
	Secondary education	51.8 (45.0 - 55.1)	
	Higher education	51.8	

		(48.4 - 51.8)	
Physical Health	No formal education	48.3 (40.5 - 55.3)	7.6 (0.055)
	Primary school	51.7 (37.5 - 56.1)	
	Secondary education	55.0 (41.6 - 57.3)	
	Higher education	57.3 (52.8 - 58.4)	
Mental Health	No formal education	49.7 (42.8 - 54.3)	6.1 (0.105)
	Primary school	47.4 (40.5 - 51.4)	
	Secondary education	52.0 (45.1 - 56.6)	
	Higher education	56.6 (45.1 - 63.4)	

Number of cases per Educational Level category: No formal education: 16, Primary school: 30, Secondary education: 33, Higher education: 21.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of Educational.

5.9 Relationship Between Income Level and PROMs Dimensions

A Kruskal-Wallis test was conducted to examine differences in PROMs dimensions across income levels. For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant differences across income brackets, $\chi^2 = 1.2$, $p = .543$, with all income groups showing similar satisfaction levels (Mdn = 51.8, with varying interquartile ranges).

Mental Health scores showed significant differences across income levels, $\chi^2 = 6.8$, $p = .034$. Participants in higher income brackets (4001+ Shekels) reported better mental health (Mdn = 60.0, Q1–Q3 = 50.8–64.6) compared to those in middle (Mdn = 49.7, Q1–Q3 = 45.1–54.3) and lower income brackets (Mdn = 48.5, Q1–Q3 = 40.5–54.8).

Physical Health scores demonstrated significant differences across income levels, $\chi^2 = 18.9$, $p < .001$. Participants in the lowest income bracket (0-2000 Shekels) reported the poorest physical health (Mdn = 50.0, Q1–Q3 = 37.2–55.0), while those in higher income brackets showed better physical health: 2001-4000 Shekels (Mdn =

56.1, Q1–Q3 = 54.7–57.3) and 4001+ Shekels (Mdn = 56.7, Q1–Q3 = 54.7–61.7). As shown in table 5.9.

Note: The sample included 56 participants in the 0-2000 Shekels bracket, 32 in the 2001-4000 Shekels bracket, and 12 in the 4001+ Shekels bracket.

Table 5.9: Relationship Between Income Level and PROMs Dimensions

Dimension	Income Level	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	0-2000 Shekels	51.8 (47.5 - 55.1)	1.2 (0.543)
	2001-4000 Shekels	51.8 (41.6 - 55.1)	
	4001+ Shekels	51.8 (50.1 - 58.5)	
Physical Health	0-2000 Shekels	50.0 (37.2 - 55.0)	18.9 (0.000)*
	2001-4000 Shekels	56.1 (54.7 - 57.3)	
	4001+ Shekels	56.7 (54.7 - 61.7)	
Mental Health	0-2000 Shekels	48.5 (40.5 - 54.8)	6.8 (0.034)*
	2001-4000 Shekels	49.7 (45.1 - 54.3)	
	4001+ Shekels	60.0 (50.8 - 64.6)	

Number of cases per Income Level category: 0-2000 Shekels: 56, 2001-4000 Shekels: 32, 4001+ Shekels: 12.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of Income.

5.10 Relationship Between Type of Stroke and PROMs Dimensions

A Kruskal-Wallis test was conducted to examine differences in PROMs dimensions across stroke types (ischemic stroke, hemorrhagic stroke, and transient ischemic attack (TIA)). For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant differences across stroke types, $\chi^2 = 0.3$, $p = .862$, with all groups showing similar satisfaction levels (Mdn = 51.8, with varying interquartile ranges).

Mental Health scores also showed significant differences across stroke types, $\chi^2 = 10.9$, $p = .004$. TIA patients reported the best mental health (Mdn = 58.9, Q1–Q3 = 49.7–64.6), followed by hemorrhagic stroke patients (Mdn = 52.0, Q1–Q3 = 46.2–60.0), while ischemic stroke patients reported the poorest mental health (Mdn = 47.4, Q1–Q3 = 40.5–54.3).

Physical Health scores demonstrated significant differences across stroke types, $\chi^2 = 7.9$, $p = .019$. TIA patients reported the best physical health (Mdn = 57.3, Q1–Q3 = 55.6–62.8), followed by ischemic stroke patients (Mdn = 53.3, Q1–Q3 = 39.7–57.3), while hemorrhagic stroke patients reported the poorest physical health (Mdn = 51.7, Q1–Q3 = 43.9–56.7). As shown in table 5.10.

Note: The sample included 74 ischemic stroke patients, 15 hemorrhagic stroke patients, and 11 TIA patients.

Table 5.10: Relationship Between Type of Stroke and PROMs Dimensions

Dimension	Type of Stroke	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	Ischemic Stroke	51.8 (45.0 - 55.1)	0.3 (0.862)
	Hemorrhagic Stroke	51.8 (46.7 - 55.1)	
	Transient Ischemic Attack (TIA)	51.8 (51.8 - 51.8)	
Physical Health	Ischemic Stroke	53.3 (39.7 - 57.3)	7.9 (0.019)
	Hemorrhagic Stroke	51.7 (43.9 - 56.7)	
	Transient Ischemic Attack (TIA)	57.3 (55.6 - 62.8)	
Mental Health	Ischemic Stroke	47.4 (40.5 - 54.3)	10.9 (0.004)
	Hemorrhagic Stroke	52.0 (46.2 - 60.0)	
	Transient Ischemic Attack (TIA)	58.9 (49.7 - 64.6)	

Number of cases per Type of Stroke category: Ischemic Stroke: 74, Hemorrhagic Stroke: 15, Transient Ischemic Attack (TIA): 11.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of Type of Stroke.

5. 11 Relationship between Social Roles Ability and PROMs Dimensions

A Kruskal-Wallis test examined differences in PROMs dimensions across social roles ability levels. For all dimensions, higher T-scores indicate better outcomes.

Patient Satisfaction showed no significant differences across ability levels, $\chi^2 = 6.9$, $p = .140$.

Mental Health scores also showed significant differences, $\chi^2 = 56.0$, $p < .001$. Similar to physical health, mental health improved with better social roles ability, from poor (Mdn = 38.2, Q1–Q3 = 33.6–42.8) to excellent (Mdn = 63.4, Q1–Q3 = 63.4–68.0).

Physical Health scores differed significantly, $\chi^2 = 52.0$, $p < .001$. A clear gradient emerged from poor (Mdn = 39.4, Q1–Q3 = 31.6–43.9) to excellent ability (Mdn = 61.7, Q1–Q3 = 53.9–62.8), with progressively better physical health as social roles ability improved. As shown in table 5.11.

Note: The sample included 25 poor, 34 fair, 24 good, 12 very good, and 5 excellent social roles ability cases.

Table 5.11: Relationship Between Social Roles Ability and PROMs Dimensions

Dimension	Social Roles Ability	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	Poor	51.8 (45.0 - 55.1)	6.9 (0.140)
	Fair	51.8 (45.0 - 54.3)	
	Good	55.1 (51.8 - 58.5)	
	Very Good)	51.8 (50.9 - 51.8)	
	Excellent	55.1 (51.8 - 58.5)	
Physical Health	Poor	39.4 (31.6 - 43.9)	52.0 (0.000)
	Fair	53.3 (43.9 - 55.9)	
	Good	57.3 (55.0 - 57.3)	
	Very Good)	58.4 (57.0 - 60.0)	

	Excellent	61.7 (53.9 - 62.8)	
Mental Health	Poor	38.2 (33.6 - 42.8)	56.0 (0.000)
	Fair	48.5 (45.1 - 53.7)	
	Good	52.0 (49.1 - 57.1)	
	Very Good	61.1 (56.0 - 68.0)	
	Excellent	63.4 (63.4 - 68.0)	

Number of cases per Social Roles Ability category: Poor: 25, Fair: 34, Good: 24, Very Good: 12, Excellent: 5.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of Type of Stroke.

5.12 Relationship between Overall Health and PROMs Dimensions

A Kruskal-Wallis test examined differences in PROMs dimensions across overall health levels. For all dimensions, higher T-scores indicate better outcomes.

Patient Satisfaction showed no significant differences across health levels, $\chi^2 = 3.6$, $p = .468$. While fair health patients reported lower satisfaction (Mdn = 45.0, Q1–Q3 = 38.3–55.1), all other groups showed better and similar satisfaction levels (Mdn = 51.8, with varying interquartile ranges).

Mental Health scores showed similar significant differences, $\chi^2 = 55.9$, $p < .001$, with a consistent gradient from poor (Mdn = 37.1, Q1–Q3 = 33.6–41.1) to excellent health (Mdn = 65.7, Q1–Q3 = 63.4–68.0).

Physical Health scores differed significantly, $\chi^2 = 50.0$, $p < .001$, showing a clear gradient. Patients reporting poor health had the lowest scores (Mdn = 37.2, Q1–Q3 = 31.3–39.7), improving progressively through fair (Mdn = 51.7, Q1–Q3 = 36.1–55.0), good (Mdn = 53.9, Q1–Q3 = 47.2–57.3), very good (Mdn = 57.3, Q1–Q3 = 55.0–58.4), to excellent health (Mdn = 61.7, Q1–Q3 = 59.5–62.8). As shown in table 5.12.

Note: The sample included 16 poor, 17 fair, 43 good, 15 very good, and 9 excellent overall health cases.

Table 5.12: Relationship Between Overall Health and PROMs Dimensions

Dimension	Overall Health	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	Poor	51.8 (41.6 - 55.1)	3.6 (0.468)
	Fair	45.0 (38.3 - 55.1)	
	Good	51.8 (48.4 - 55.1)	
	Very Good)	51.8 (51.8 - 55.1)	
	Excellent	51.8 (51.8 - 51.8)	
Physical Health	Poor	37.2 (31.3 - 39.7)	50.0 (0.000)*
	Fair	51.7 (36.1 - 55.0)	
	Good	53.9 (47.2 - 57.3)	
	Very Good)	57.3 (55.0 - 58.4)	
	Excellent	61.7 (59.5 - 62.8)	
Mental Health	Poor	37.1 (33.6 - 41.1)	55.9 (0.000)*
	Fair	45.1 (40.5 - 49.7)	
	Good	49.7 (47.4 - 54.3)	
	Very Good	56.6 (54.3 - 62.3)	
	Excellent	65.7 (63.4 - 68.0)	

Number of cases per Overall Health category: Poor: 16, Fair: 17, Good: 43, Very Good: 15, Excellent: 9.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of Type of Stroke.

5.13 Relationship Between Hospital Regions and PROMs Dimensions

A Kruskal-Wallis test was conducted to examine differences in PROMs dimensions across hospital regions (Central, North, and South). For all dimensions, higher T-scores indicate better patient satisfaction, better physical health, and better mental health, respectively.

Patient Satisfaction showed no significant differences across hospital regions, $\chi^2 = 2.0$, $p = .361$. The median scores were similar for all regions: Central (Mdn = 51.8, Q1–

Q3 = 48.4–58.5), North (Mdn = 51.8, Q1–Q3 = 45.0–55.1), and South (Mdn = 51.8, Q1–Q3 = 45.0–55.1).

Mental Health also showed no significant differences across the hospital regions, $\chi^2 = 2.9$, $p = .239$. The South region reported slightly higher mental health scores (Mdn = 52.0, Q1–Q3 = 45.1–58.9), compared to the Central region (Mdn = 49.7, Q1–Q3 = 45.1–56.6) and the North (Mdn = 47.4, Q1–Q3 = 40.5–54.3).

Physical Health also showed no significant differences in physical health across the hospital regions, $\chi^2 = 0.1$, $p = .935$. North hospitals' patients reported slightly higher physical health (Mdn = 55.0, Q1–Q3 = 38.8–57.3), followed by the South (Mdn = 54.5, Q1–Q3 = 42.5–57.3), and the Central region (Mdn = 53.9, Q1–Q3 = 42.7–57.3). As shown in table 5.13.

Table5.13: Relationship Between Hospital Regions and PROMs Dimensions

Dimension	Hospital Region	Median (Q1 - Q3)	χ^2 (P_Value)
Patient Satisfaction	Central	51.8 (48.4 - 58.5)	2.0 (0.361)
	North	51.8 (45.0 - 55.1)	
	South	51.8 (45.0 - 55.1)	
Physical Health	Central	53.9 (42.7 - 57.3)	0.1 (0.935)
	North	55.0 (38.8 - 57.3)	
	South	54.5 (42.5 - 57.3)	
Mental Health	Central	49.7 (45.1 - 56.6)	2.9 (0.239)
	North	47.4 (40.5 - 54.3)	
	South	52.0 (45.1 - 58.9)	

Number of cases per Hospital Region category: Central: 29, North: 47, South: 24.

*Statistical significance is interpreted at a level of significance of $p < 0.05$.

Kruskal-Wallis test was used to compare the T-scores across different levels of Hospital Regions.

5.14 PROMs Dimensions Scores across Rehabilitation Centers (N=49)

Private physiotherapists represented the majority (55.1%), showing moderate outcomes across dimensions (Patient Satisfaction: Mdn=55.1, Q1-Q3=45.0-58.5; Physical Health: Mdn=52.8, Q1-Q3=38.8-55.6; Mental Health: Mdn=47.4, Q1-Q3=42.8-53.1).

Remaining rehabilitation centers showed varying patterns:

- Khalil Abu Raya (12.2%): moderate satisfaction (Mdn=50.1) but lower physical health (Mdn=41.6)
- Bethlehem Arab Society (8.2%): consistently higher scores (Patient Satisfaction: Mdn=55.1, Physical Health: Mdn=50.6, Mental Health: Mdn=54.3)
- Al-Meezan (6.1%): good physical health (Mdn=55.0) with moderate satisfaction (Mdn=45.0)
- Al Amal (6.1%): lower scores across dimensions, particularly in physical health (Mdn=33.8) As shown in table 5.14

Note: Because these rehabilitation centers are represented by extremely small sample sizes, the observed medians may not be broadly generalizable, and the data should be interpreted with caution.

Table 5.14 PROMs dimensions across rehabilitation centers

PROMs Dimensions Scores across Rehabilitation Centers (N=49)

Rehabilitation Place	Number of Cases (%)	Patient Satisfaction	Physical Health	Mental Health
			Median (Q1 - Q3)	
Al-Meezan Specialized Hospital	3 (6.1)	45.0 (39.9 - 50.1)	55.0 (48.9 - 57.3)	49.7 (49.7 - 56.6)
Al Amal Hospital	3 (6.1)	48.4 (31.5 - 50.1)	33.8 (32.2 - 37.2)	45.1 (41.7 - 46.2)
Alia Governmental Hospital	1 (2.0)	34.9 (34.9 - 34.9)	56.1 (56.1 - 56.1)	47.4 (47.4 - 47.4)
Beit Jala Governmental Hospital	1 (2.0)	55.1 (55.1 - 55.1)	39.4 (39.4 - 39.4)	38.2 (38.2 - 38.2)
Bethlehem Arab Society for Rehabilitation	4 (8.2)	55.1 (54.3 - 57.7)	50.6 (45.8 - 55.9)	54.3 (46.8 - 61.1)
Dura Al-Amal Charitable Association	1 (2.0)	55.1 (55.1 - 55.1)	57.3 (57.3 - 57.3)	68.0 (68.0 - 68.0)

Khalil Abu Raya Rehabilitation Center	6 (12.2)	50.1 (42.5 - 57.7)	41.6 (37.2 - 51.1)	47.4 (39.9 - 49.7)
Patient Friend's Benevolent Society	1 (2.0)	58.5 (58.5 - 58.5)	55.0 (55.0 - 55.0)	45.1 (45.1 - 45.1)
Private Physiotherapist	27 (55.1)	55.1 (45.0 - 58.5)	52.8 (38.8 - 55.6)	47.4 (42.8 - 53.1)
Red Crescent Society	1 (2.0)	58.5 (58.5 - 58.5)	57.3 (57.3 - 57.3)	52.0 (52.0 - 52.0)
UNRWA Rehabilitation Center	1 (2.0)	55.1 (55.1 - 55.1)	57.3 (57.3 - 57.3)	38.2 (38.2 - 38.2)

5.15 Summary of Results

This chapter presented the sociodemographic characteristics of the participants. Research hypotheses were tested with appropriate tests, and the results were documented. These results will be interpreted and discussed.

5.16 Discussion

This discussion provides a reflection of the results, which aimed to examine the relationship between patient-reported outcomes dimensions and stroke type, demographic factors, re-hospitalization status and frequency, for stroke patients, relates results to existing literature, also addresses implications, strengths, limitations and provides suggestions for future studies

5.17 Relationships Among PROM Dimensions

This study found a significant correlation between Physical Health and Mental Health dimensions, indicating a bidirectional relationship; specifically, higher physical health scores were related to better mental health outcomes, and vice versa.

This finding aligns with previous research, a Lebanese study on stroke patients reported that lower physical composite score was significantly associated with the depression occurrence within a year after stroke (Bou Kheir et al., 2025).

(Rimmele et al., 2020) which found a significant reduction in physical health and mental health scores 90 days after a stroke by using the ICHOM standard set. (Yuan & He, 2019). It was noted that stroke patients who received physical health treatment showed improvement in their mental health. This association emphasizes on the need to address both domains post stroke and to view stroke care holistically to identify patients who may be at risk for worse health outcomes and who might benefit from specialized care, such as psychotherapeutic support, to improve long-term outcomes. Although it is rarely used, patients with mental health conditions can benefit more from physical therapy if received in addition to conventional treatment.

This study found no significant correlation between patient satisfaction and both mental and physical health, (Abu Saydah et al., 2023) showed that a variety of elements rather than physical and mental health that have an impact on patient satisfaction, including as the patient-health provider relationship and communication, cultural context, patient's perceived autonomy, patient-centered care, and patient's expectations.

In the contrary to this research (Chen et al., 2018) reported a relationship between patient satisfaction and mental health outcomes, these opposing results are likely due

to the differences in sample size as Chen study held in the United States included 9166 participant, also there are differences in the statistical power, population, cultural and health care settings, measurement instruments Chen study used the Medical Expenditure Panel which could capture different aspects of patient satisfaction, also Chen study included patients with various health conditions other than stroke.

It's important to consider recall bias as reporting patient satisfaction after 90 days could influence the results as emotions and memory about satisfaction with treatment and health care providers could change or fade over time. Also It's important to consider social desirability bias, as some patients might have the tendency to report more favorable answers than what is truly felt, which would affect the accuracy of PROMs.

Interpersonal aspects are crucial when treating patients, besides focusing on clinical outcomes. This is especially important for the Palestinian stroke care, as mental health in Palestine is considered among the lowest in the world (Bdier et al., 2023). Psychological needs of stroke patients should be addressed and integrated into stroke care and rehabilitation programs. Neglecting mental health may hinder recovery outcomes for stroke patients.

5.18 Rehospitalization Status and PROMs

This study found a significant correlation between rehospitalization within 90 days and both physical health outcome and mental health outcome, this aligns with (Dossa et al.,2021) which reported within six-month rehospitalization was associated with the presence of more than one mental illness and (Rohweder et al.,2017) study found that hospital readmissions after stroke often reflect complications and poorer health. Fundamentally, readmission of patients is associated with risk factors such as heart failure and renal disease, which lead to poor physical and possibly mental health outcomes (Rao et al., 2016).

(Kilkenny et al., 2020). Research found that a patient's rehospitalization after stroke is more influenced by patient-level factors rather than clinical processes of care. This is important as it focuses on more individualized, patient-centered interventions aimed

at addressing patients' needs after discharge, which may be necessary to prevent rehospitalizations.

Rehospitalization could be a result of underlying illness or complications, therefore associated with poorer health outcomes. Also, rehospitalization could cause interruption or disruption in the rehabilitation process, resulting in poorer health outcomes. On the other hand, the experience of rehospitalization could cause psychological distress, which would explain the correlation with mental health outcomes.

This study found no significant correlation between Patient Satisfaction and rehospitalization. These results oppose (Anderson, 2021) a study, that found hospitals with higher Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey scores, which measure patient experience across hospitals, had significantly lower rates of readmissions ($p < 0.001$). These different outcomes are due to the various methods implemented, instruments used, and study populations.

This study found no significant correlation between Patient Satisfaction and rehospitalisation, which may be due to the relatively small sample size, possibly limiting the detection of subtle differences. Also, interpersonal experiences regardless of the clinical outcome may have contributed to this result and since data collection took place 90 days after stroke occurrence, patients may not capture the satisfaction levels. And so, this no significant correlation between Patient Satisfaction and rehospitalization or any other variable should be interpreted with caution.

This indicates there is considerable complexity to the interaction between patient experience, perceptions of care, and rehospitalization outcomes. The Palestinian healthcare system should incorporate the patients' voices into decision making, conduct quality-improvement processes, implement evidence-based discharge protocols, and explore factors that are related to rehospitalization.

5.19 Rehospitalization Frequency and PROMs

This study found a significant correlation between the frequency of rehospitalizations within 90 days and both Physical Health and Mental Health outcomes. Patients who were not re-hospitalized reported the best physical and mental health, followed by

patients re-hospitalized once, and as for patients re-hospitalized more than once reported the poorest physical and mental health outcomes (Fry et al., 2021) found that the survival probability decreased with increasing frequency of readmissions

This study found no significant correlation between Patient Satisfaction scores and re-hospitalization). Patients who had been hospitalized multiple times may still be satisfied with their care. This emphasizes that patient satisfaction captures a different dimension of healthcare quality—more associated with interpersonal aspects than clinical outcomes

As for Palestine, these results are important, structured discharge instructions, follow-up plans, medication review, and patient education are needed to reduce could help reduce re hospitalization and improve patient outcomes

5.20 Demographic Factors and PROMs

5.20.1 Age:

This study found a significant correlation between age and both physical health and mental health outcomes. The 18-44 years age group reported the best physical health and mental health, middle-aged adults (45-64 years) reported intermediate outcomes, and elderly patients (65 years and above) reported the worst outcomes. In light of the literature findings, the higher the age of the patients, the lower the mental and physical health. A study in Saudi Arabia found that advancing in age was associated with Post-Stroke Anxiety (PSA) and Post-Stroke Depression (PSD)(Robinson, 2012). Additionally, Fonarow et al. (2010) reported that older stroke patients are more likely to have a history of comorbidities such as atrial fibrillation or hypertension, which would contribute to worse health outcomes, thereby negatively affecting their recovery.

This pattern may be explained by the fact that advanced age patients show less neuroplasticity, which potentially limits recovery. Also, older patients usually have comorbidities that affect the overall health and well-being of the patients and may affect the recovery and rehabilitation

On the other hand, this study found no significant correlation between age and patient satisfaction, suggesting that stroke patients have a relatively consistent perception of quality of services and satisfaction with care across age groups, despite differences in health outcomes. It's important to note that middle-aged patients reported the highest satisfaction (Mdn = 55.1) as they may have a more realistic perception and expectation from treatment and rehabilitation than younger patients and could be more engaged to their treatment and rehabilitations than the elderly.

All these results are important to take into account; age-tailored rehabilitation strategies for stroke patients in the Palestinian healthcare system, older stroke patients possibly require more assistance and resources and would benefit from interventions that specifically address their particular challenges in both the physical and mental health domains, younger patients' better outcomes suggest greater recovery potential that could be maximized through intensive, targeted rehabilitation programs

5.20.2 Gender:

The study found a significant correlation in physical health outcomes and gender, with female patients reporting worse physical health than male patients. In the case of mental health, there was no significant correlation. Male patients reported somewhat better mental health compared to women. This result is similar to the findings from the previous literature, as women have lower odds of a good outcome and a higher prevalence of PSD based on the study by Hewitt et al. (2021), who indicate that the health outcomes of women are worse following acute illness. A study in Qatar reported that women had more severe stroke, higher rates of poor recovery and mortality (Naveed et al., 2023). In addition a study in Saudi Arabia reported that women had a significantly lower quality of life scores than men after stroke. (Almrzouqi et al., 2022). There was no significant correlation between gender and patient satisfaction, which is in line with the findings of this study (Telebuh et al., 2025) that found that there are similar levels of satisfaction across genders. Suggesting that for both genders evaluate their care experience similarly.

Although the reasons for sex-specific outcome differences in stroke are still under debate, several possible factors could help explain the results of this research. Women live longer with physical disabilities, plus they experience more mental health problems than men. Additionally, socioeconomic disadvantages are more common among women, and biological factors such as hormones and chromosomes contribute. Furthermore, women have been found to exhibit unusual stroke symptoms, which can hinder treatment and lead to unfavorable outcomes.

In Palestine it's important to conduct gender-sensitive stroke rehabilitation strategies that focus on the difficulties faced by female patients. These could include techniques to improve access to care for female stroke survivors and interventions to increase social support. To create equitable stroke care programs that successfully meet the needs of all patients, regardless of gender.

5.20.3 Income:

This study found a significant correlation between income level and both physical and mental health domains. Patients with higher income reported better physical and mental health, while patients in the lower-income category recorded the worst physical and mental health compared to the higher-income earners, who reported better outcomes. Fundamentally, the results by Che et al. (2020) align with those of this study as they highlight that low socioeconomic conditions are linked with undesirable quality of care for stroke patients, lower survival rate, and heightened risk of occurrence of the illness

(Bettger et al., 2014) found that the lower socioeconomic status for stroke patients was independently associated with worse functional outcomes and QoL after stroke.

Lower income could restrict access to rehabilitation services, especially private physiotherapy, which accounted for 55.1% of the rehabilitation providers in this study's sample, and could also affect medication availability, adherence and maintaining a healthy lifestyle. Living circumstances and nutritional status could help or hinder healing. Resources for transportation to rehabilitation sessions and follow-up appointments, all of which may help to explain the income-related differences reported.

These findings underscore the need for targeted assistance for stroke patients with lower incomes, such as medication assistance programs and rehabilitation services.

There was no significant correlation between income level and patient satisfaction (p =.543). Patients with different income levels appear to have similar opinions about their care experiences. This could be a result of similar expectations across income groups or the comparatively uniform care provided in Palestinian public hospitals.

5.20.4 Education level

The study found no significant correlation between education level and PROMs dimension; Mental Health scores showed no statistically significant differences across educational levels, p = .105. However, participants with higher education tended to report better mental health. Also, physical health scores did not reach statistical significance, p = .055. A trend was observed where participants with higher education reported better physical health this aligns with (Che et al., 2020) that found that low education level was associated with higher mortality, cardiovascular diseases, recurrent strokes and could lead to limited access to care, causing elevated psychological stress and (Braadt et al., 2022) found that lower educational levels were significantly associated with a lower HRQoL post stroke. Similar findings were presented in a study in Jordan that found that education level significantly affected QoL in terms of interpersonal interactions, cognition, emotions, and pain.(Malkawi et al., 2024)

This study found that Patient Satisfaction showed no significant differences across educational levels. This suggests that regardless of the level of education, health care experience is perceived in the same manner, which points the need for identification of factors that affect patient satisfaction

Education level can affect the knowledge of the disease and the recovery; therefore, it could enhance compliance with the treatment and rehabilitation. Furthermore, a better education can be linked to better income, which all lead to better health outcomes.

Palestinian healthcare system should implement community-based educational programs such as mass media campaigns, educational initiatives, and healthcare

projects, in order to increase stroke awareness, early identification, and prompt intervention, which could play a role in reducing the burden of stroke-related morbidity and mortality in Palestine

5.21 Stroke Type and PROMs

This study found a significant correlation between stroke types and both physical and mental health outcomes. Patients with TIA reported the best physical and mental health outcomes, this outcome is plausible given the fact that TIA symptoms are transient and resolve within 24 hours.

As for Ischemic stroke, which was the dominant type of stroke, as many other studies also reported, (Abdu et al., 2021) ischemic stroke patients reported the poorest mental health and Intermediate physical outcomes. In contrast, hemorrhagic stroke patients reported the poorest physical health outcome and intermediate mental health outcome.

That aligns with previous studies, (Ghoreishi et al., 2024) study used mRS score to evaluate functional outcomes for stroke patients at three months post stroke found that patients with hemorrhagic stroke have poorer functional outcomes than those with ischemic stroke (Abdu et al., 2021) in Ethiopia. It was reported that patients with hemorrhagic stroke are more likely to suffer from atrial fibrillation and structural heart diseases. (Chiu et al., 2010) A study demonstrated that hemorrhagic stroke was more associated with poor neurologic outcome, doubling the likelihood of long-term disability in comparison with ischemic stroke**.**

According to Zeng et al., (2021), post-stroke depression in hemorrhagic stroke was more prevalent, with over twofold higher risk patients than in ischemic stroke. Moreover, Kim et al., (2024) reported that when it comes mood disturbances hemorrhagic stroke patients mood distubenaces were the most severe, ischemic stroke patients reported Intermediate mood disturbances and TIA patients reported the lowest mood disturbances, a study conducted in Egypt to examine cognitive functions in ischemic and hemorrhagic stroke patients found that hemorrhagic stroke patients have poorer cognitive functions outcomes than patients with ischemic stroke, depending on Rehacom system, a computer-assisted cognitive rehabilitation software system, they found that memory and logical thinking are more impaired in patients with hemorrhagic

strokes, while attention, focus are more affected in patients with ischemic strokes. (Elrewainy et al., 2023)

The differences in mental health outcomes between the previous studies and this study are likely due to differences in study population, methods and measurement tools utilized, timing of outcome measurement, and rehabilitation; cultural and healthcare system differences also play a role in the perception of mental health outcomes. Also, in this study, stroke severity was not accounted for, which may have affected the results. Additionally, the number of hemorrhagic stroke patients was fifteen, and TIA patients were eleven, which limits the generalizability of the results.

This study found no significant correlation between patient satisfaction and stroke type, suggesting that stroke patients have a relatively consistent perception of quality of services and satisfaction with care, despite differences in stroke type

5.22 Relationship between Social Roles Ability and PROMs Dimensions

This study found a significant correlation between the ability to perform Social Roles and physical and mental health outcomes, and no significant correlation between the ability to perform Social Roles and patient satisfaction.

Elayoubi et al., (2023) found that the ability to participate and make social connections was associated with better functional outcomes and depressive symptoms. Fewer instrumental activities of daily living (IADL) limitations and better mental health were found in stroke patients who were socially connected. (Lin et al., 2019) randomized controlled trial found that stroke patients who received routine rehabilitation plus a social support intervention demonstrated significantly fewer depressive symptoms than a control group.

Highlighting the role of social support for maintaining stroke patients' motivation and commitment to their rehabilitation. This is important in the Palestinian health care system, where social connection and engagement programs should be a core component of rehabilitation

The lack of significant correlation with patients’ satisfaction suggests that patient satisfaction is influenced by other factors as mentioned earlier. However, addressing patient satisfaction is needed to ensure comprehensive care.

5.23 Relationship between Overall Health and PROMs Dimensions

This study found a significant correlation between overall health and physical and mental health outcomes, and no significant correlation between overall health and patient satisfaction.

A systematic review found that in most studies, poor self-rated overall health was associated with motor and balance impairments, restrictions in activities of daily living and returning to work, poor social life, and emotional status post-stroke(Araújo et al., 2019) , which aligns with this study.

Given the correlation between disability and the perception of overall health, it is particularly crucial to identify priority patients and understand the factors that have a positive attitude toward stroke recovery. This can be done by evaluating each patient's view of their health and adjusting rehabilitation as necessary.

A straightforward, simple question such as "How would you rate your health" can provide the healthcare provider with a great deal of information and allow them to conduct targeted treatment and rehabilitation.

The lack of significant correlation in patient satisfaction suggests that satisfaction is influenced by other factors, as mentioned earlier. Therefore, patient satisfaction should be interpreted alongside physical and mental health measures to ensure a comprehensive patient evaluation.

5.24 PROMs Dimensions and Rehabilitation:

The study found that in-hospital rehabilitation satisfaction (28.6%) which is lower than after discharge rehabilitation satisfaction (75.5%) this requires special attention as its probably suggest a protentional systemic problem with in patients rehabilitation services and warrant quality improvement processes, The wide difference in outcomes between rehabilitation centers indicates the need for standardization and benchmarking of quality measurement care. However, these differences must be viewed with extreme caution due to the very small sample sizes. which highly limits

the generalizability of the findings. The rehabilitation findings of this study can't be fully understood without considering the Palestinian rehabilitation barriers.

Several barriers restrict access to rehabilitation in Palestine services. First healthcare providers often do not recognize the conditions that would benefit from rehabilitation. Second, the availability of rehabilitation centers is scarce and unevenly distributed across the west bank. Third movement restrictions from checkpoints and their related traffics and safety concerns. Forth the government health insurance which does not provide comprehensive rehabilitation services and so patients depend on NGOs that provide only short-term services or go to private centers (Handicap International [HI], 2022) . All these barriers affect the recovery and outcomes for stroke patients

2.25 Living Arrangement and Length of Stay

Most participants lived with family (n = 85, 85.0%), (n = 12, 12.0%) lived with a spouse, (n = 3, 3.0%) lived alone. No participants reported living with a caregiver or in a care home. Hospital length of stay was predominantly 0-7 days (n = 76, 76.0%), with decreasing frequencies for longer stays: 8-14 days (n = 14, 14.0%), 15-30 days (n = 6, 6.0%), and more than 30 days (n = 4, 4.0%).

Statistical analysis of these variables and their relation with PROMs was not feasible due to extreme imbalance across their categories and limited sample size. This would undermine statistical reliability, as most of the sample was concentrated in a single category. Future research is needed with a larger sample and an extended data collection period.

Palestine has a culture and norms with a strong family-centered support system, which would explain why most of the sample were living with their families and spouses. As for the length of stay, the trend toward the shorter period could reflect efficient acute stroke care management. However, it could also suggest the pressure associated with hospital bed capacity and raise concerns about how adequate the post-discharge care is, as early discharge could lead to unmet recovery.

5.26 Hospital Region

Our study found no significant correlation between hospital region (NORTH, CENTRAL, WEST) and PROMs dimensions, which can suggest that there is consistency in stroke care and quality of services across the areas, however given the fact that the sample size of this study from the three regions is relatively small and inclusion of the public sector only caution should be taken when interpreting the result, a larger, multicenter studies of both public and private sector should be conducted for a better insight.

5.27 Implications for Clinical Practice and Health Policy

Integrated Approach to Stroke Care

The results showed a significant association between physical and mental health dimensions, and so stroke care and rehabilitation services must address both the physical and psychological health of stroke patients. Palestinian health care institutions must implement programs that cover physical and psychological aspects. Also, stroke patients should be screened for depression and anxiety and any other mental health issues in acute care and rehabilitation. Cognitive behavioral therapy and peer support programs should be developed.

Improvements in Rehabilitation

The results showed low satisfaction with hospital rehabilitation (28.6%) compared to after discharge rehabilitation (75.5%), which indicates opportunities for quality improvements, such as: rehabilitation services must be available in hospitals, consisting of specialized teams that implement standardized protocols according to evidence-based international best practices

Targeting High-Risk Groups

The findings of this study will be crucial in making important decisions regarding the treatment of stroke and could lead to better health outcomes as treatment approaches will be adopted based on the individual-specific needs. For instance, stroke patients who have been re-hospitalized demonstrate worse mental and physical health outcomes compared to non-re-hospitalized. And so, identifying re-hospitalized patients

or patients at risk for rehospitalization would help in improving care delivery and achieving better care outcomes by implementing targeted interventions, for example discharge and follow up planning and medication reconciliation and telehealth check ins. Similarly, social determinants of health, such as level of education and socioeconomic status, also contribute significantly to the physical and mental health state of the patients; addressing these issues before engaging in treatment can lead to excellent health outcomes, educational workshops, subsidized rehabilitation and transportation assistance would greatly improve these issues. Besides, since women may have worse health outcomes compared to their male counterparts, implementing a unique treatment approach, such as Gender-sensitive rehabilitation programs for stroke patients, will help improve the QoL of all the affected stroke patients

Reducing Rehospitalizations

The results showed a significant association between rehospitalization and poorer mental and physical health outcomes. Therefore, various strategies to reduce rehospitalizations should be adopted, such as implementing transitional care programs, early follow-up appointments, patient education about the disease, medication, and warning signs.

Routine Collection of PROMs

Palestinian hospitals should implement the routine collection of Patient-Reported Outcome Measures as a standard component of stroke care. PROMs offer critical insights into patients' perceptions of their health, functional status, and QoL following a stroke—domains often underrepresented in clinical assessments. Integrating PROMs into routine clinical workflows allows healthcare providers to monitor patient progress, tailor interventions to individual needs, and identify unmet care priorities.

Establishing PROMs collection systems can enhance the continuity and person-centeredness of stroke care, enabling more informed clinical decision-making and improved communication between providers and patients. Moreover, aggregate

PROMs data can support quality improvement initiatives, health system performance monitoring, and research on long-term stroke outcomes in the Palestinian context.

To ensure effectiveness, PROMs should be culturally adapted, validated in Arabic, and embedded within electronic health records. Training for healthcare staff on interpreting and utilizing PROMs is also essential. Ultimately, systematic PROMs collection can contribute to higher-quality stroke care and better health outcomes, while aligning with global best practices in post-stroke management.

5.28 Recommendations

Based on these findings, we recommend:

- Involving patient reported outcome measures in patients care at Palestinian hospitals, developing standardized protocols for collecting PROMs for monitoring and benchmarking.
- Implement patient centered approach for stroke patients and target those with potentially worse outcomes such as female gender, older age, lower education level individuals.
- Conduct quality improvement projects for health care workers in order to correctly document in the HIS.
- Enhancing the rehabilitation services in Palestine, as there were variations with rehabilitation centers services and outcomes from the patient's perception, and low satisfaction level with inpatient rehabilitation this warrant intensive investigation and quality improvement programs
- Initiation of mental health support programs, and integrate it with stroke patients care in acute and rehabilitation phases to ensure comprehensive care and enhance patients' outcomes.
- Creation of financial assessments programs, as lower income patients showed worse outcomes

5.29 Strengths

This is the first study to address patient-reported outcome measures (PROMs) among stroke patients in Palestine, and one of the few such investigations in the Middle East. As such, it addresses a critical gap in the literature and lays the groundwork for further research and policy development related to stroke care in the region. The study provides an initial framework for integrating PROMs into clinical practice and hospital protocols, both during inpatient care and after discharge

A key strength of this research is its multidimensional approach of patient-reported outcomes, encompassing domains such as patient satisfaction, physical health, and mental health, which enable us to view patients care compressively and better understand patient experience, the bidirectional relationship between physical and mental health highlights the importance of mental health care and the need to be included in rehabilitation programs.

Furthermore, the study identified vulnerable subpopulations—including women and older adults—who reported poorer outcomes. These findings support the need for individualized, equity-focused care strategies and more targeted rehabilitation interventions.

In addition, the use of a validated, patient-centered methodology enhances the reliability of our findings and aligns with global trends in measuring healthcare quality from the patient's perspective. The study also offers valuable insights for clinicians, health administrators, and policymakers seeking to optimize stroke care delivery in resource-limited and conflict-affected settings.

5.30 Limitations

The study was conducted exclusively in public sector hospitals in the West Bank, and did not include facilities in the Gaza Strip, which may limit generalizability of the findings to the broader Palestinian population. The use of a cross-sectional design further restricts the ability to establish causal relationships between variables as it captures data at a single point of time.

The study relied on patient self-reporting to assess outcomes, introducing the potential for response bias. Patients may have underreported or overreported their experiences due to recall issues, personal perceptions, or social desirability.

Also, since the PROMs used in this study were from Western sources the applicability and cultural adaptation of the PROMs couldn't be fully assessed. However, the researcher noted that the patients generally understood them, so future research should include cultural adaptation studies to ensure PROMs fit the local populations well. In addition, the study was constrained by inadequate documentation practices and inconsistencies in health information system (HIS) records across the 12 participating hospitals. These issues posed significant challenges in identifying eligible stroke patients. For example, instead of being properly coded using the International Classification of Diseases, Tenth Revision (ICD-10), stroke cases were frequently recorded under vague terms such as "acute pain" or "headache." This may have led to under-recording of actual stroke cases and hindered the accuracy of sample selection.

Due to these limitations, random sampling was not feasible. The researcher opted instead for a purposive approach to include as many confirmed stroke cases as possible, resulting in a relatively small sample size (n = 100). The absence of stroke severity data—also a consequence of incomplete documentation—further limits the ability to stratify or adjust findings based on clinical risk.

Future research should address these limitations by improving diagnostic coding practices, standardizing medical records, and expanding sampling to include the Gaza Strip and non-governmental healthcare settings.

5.31 Future Research

One of the very important future research areas is longitudinal studies to track PROMs over time, as well as intervention studies to evaluate the effectiveness of PROMs. Since stroke represents a significant financial burden on the healthcare system, an economic analysis should be conducted to examine the cost-effectiveness of PROMs interventions, and cultural adaptations study of PROMS This research

should serve as a starting point in Palestine to conduct more in-depth studies of PROMs across different aspects of the healthcare system.

5.32 Conclusion

The study provides insights to stroke care in Palestine, the bidirectional relationship between the physical and mental health outcomes suggests that stroke care should follow a holistic and integrated approach, as it is insufficient to address one domain without the other.

Rehospitalization was found to be a predictor of poor prognosis, thus it is important to develop new initiatives in order to reduce rehospitalization such as, structured discharge instructions, follow-up plans, medication review, and patient and caregiver education .

As for demographics including older adults, women gender, and lower income were associated with poor health outcomes, requiring targeted care and enhancement of strategies and policies to ensure equitable, accessible, evident based, patient centered, in-hospital care and rehabilitation centers care. The study also found variations in outcomes with each stroke type thus there is a need for stroke type specific rehabilitation protocols with strategies that serve each stroke types needs.

Given the correlation between disability and the perception of overall health, it is particularly crucial to identify priority patients and understand the factors that have a positive attitude toward stroke recovery. This can be done by evaluating each patient's view of their health and adjusting rehabilitation as necessary

The correlation between health outcomes and social roles ability is important for maintaining stroke patients' motivation and commitment to their rehabilitation. And so, this is important in the Palestinian health care system, where social connection and engagement programs should be a core component of rehabilitation

This study sets foundations for future research, regarding patient reported outcomes and makes a contribution to a clinical care and health care policy
and this study also underscores the need to change fragmented, one-dimensional care to a patient-centered, comprehensive stroke care.in Palestine.

This study also emphasizes on the importance of routine PROMs collection in achieving patient-centered care delivery and continuous quality improvement to enhance stroke patient outcomes and QoL.

References

Abdu, H., Tadese, F., & Seyoum, G. (2021). Comparison of Ischemic and Hemorrhagic Stroke in the Medical Ward of Dessie Referral Hospital, Northeast Ethiopia: A Retrospective Study. *Neurology Research International*, *2021*, 9996958. https://doi.org/10.1155/2021/9996958

Abu Saydah, H., Turabi, R., Sackley, C., & Moffatt, F. (2023). Stroke Survivor's Satisfaction and Experience with Rehabilitation Services: A Qualitative Systematic Review. *Journal of Clinical Medicine 2023, Vol. 12, Page 5413*, *12*(16), 5413. https://doi.org/10.3390/JCM12165413

Almrzouqi, H., Albogmi, A., Meer, N., Bukhari, R., Alzahrani, R., & Alnajashi, H. (2022). Determinants of quality of life in patients with hemorrhagic stroke, Saudi Arabia: A cross-sectional study. *Neurosciences*, *27*(4), 282–289. https://doi.org/10.17712/nsj.2022.4.20220039

Alshahrani, A. M. (2020). Quality of life and social support: Perspectives of Saudi Arabian stroke survivors. Science Progress, 103(3), 0036850420947603. https://doi.org/10.1177/0036850420947603

Altamirano-Bustamante, M. M., Altamirano-Bustamante, N. F., Lifshitz, A., Mora-Magaña, I., de Hoyos, A., Avila-Osorio, M. T., Quintana-Vargas, S., Aguirre, J. A., Méndez, J., Murata, C., Nava-Diosdado, R., Martínez-González, O., Calleja, E., Vargas, R., Mejía-Arangure, J. M., Cortez-Domínguez, A., Vedrenne-Gutiérrez, F., Sueiras, P., Garduño, J., … Reyes-Fuentes, A. (2013). Promoting networks between evidence-based medicine and values-based medicine in continuing medical education. BMC Medicine, 11, 39. https://doi.org/10.1186/1741-7015-11-39

Anderson, S. (2021). Examining the relationship between patient experience and readmission rates: A profile deviation analysis. *Health Services Management Research*, *34*(4), 234–240. https://doi.org/10.1177/0951484820987499

Araújo, É. D. F., Viana, R. T., Teixeira-Salmela, L. F., Lima, L. A. O., & De Morais Faria, C. D. C. (2019). Self-rated health after stroke: A systematic review of the literature. *BMC Neurology*, *19*(1), 1–14. https://doi.org/10.1186/S12883-019-1448-6/PEER-REVIEW

Asplund K, Hulter Åsberg K, Appelros P, et al. The Riks-Stroke story: building a sustainable national register for quality assessment of stroke care. International Journal of Stroke. 2011;6(2):99-108.

Baker, C., Foster, A. M., D'Souza, S., Godecke, E., Shiggins, C., Lamborn, E., Lanyon, L., Kneebone, I., & Rose, M. L. (2022). Management of communication disability in the first 90 days after stroke: a scoping review. *Disability and Rehabilitation*, *44*(26), 8524–8538. https://doi.org/10.1080/09638288.2021.2012843

Bdier, D., Veronese, G., & Mahamid, F. (2023). Quality of life and mental health outcomes: the role of sociodemographic factors in the Palestinian context. *Scientific Reports*, *13*(1), 1–7. https://doi.org/10.1038/S41598-023-43293-6;SUBJMETA=477,478,631,692,700;KWRD=PSYCHOLOGY,PUBLIC+HEALTH

Bettger, J. P., Zhao, X., Bushnell, C., Zimmer, L., Pan, W., Williams, L. S., & Peterson, E. D. (2014). The association between socioeconomic status and disability after stroke: Findings from the Adherence eValuation After Ischemic stroke Longitudinal (AVAIL) registry. *BMC Public Health*, *14*(1), 1–8. https://doi.org/10.1186/1471-2458-14-281/TABLES/3

Boter, H., De Haan, R. J., & Rinkel, G. J. (2003). Clinimetric evaluation of a Satisfaction-with-Stroke-Care questionnaire. Journal of Neurology, 250(5), 534–541. https://doi.org/10.1007/s00415-003-1031-2.

Bou Kheir, R., Akel, M., Abi Rached, J., Salameh, P., & Zeinoun, P. (2025). Anxiety and depression one year after the first stroke among Lebanese survivors. *BMC Psychiatry*, *25*(1), 69. https://doi.org/10.1186/s12888-025-06997-9

Boyce, M. B., Browne, J. P., & Greenhalgh, J. (2014). The experiences of professionals with using information from patient-reported outcome measures to improve the quality of healthcare: A systematic review of qualitative research. BMJ Quality & Safety, 23(6), 508-518. https://doi.org/10.1136/bmjqs-2013-002524

Braadt, L., Meisinger, C., Linseisen, J., Kirchberger, I., Zickler, P., Naumann, M., & Ertl, M. (2022). Influence of educational status and migration background on the long-term health-related Quality of life after stroke. *European Journal of Neurology*, *29*(11), 3288–3295.

https://doi.org/10.1111/ENE.15503;REQUESTEDJOURNAL:JOURNAL:14681331;W

GROUP:STRING:PUBLICATION

Braadt, L., Fischer, S., Naumann, M., Zickler, P., Schneider-Axmann, T., Mühlich, L., Körber, K., Lassner, A., Strube, W., Röh, A., Hasan, A., & Ertl, M. (2024). Psychological interventions for improvement of symptoms of post-stroke depression – study protocol of the depression-intervention study for optimization of reconvalesence after stroke (Discover). Neurological Research and Practice, 6(1). https://doi.org/10.1186/s42466-024-00347-y

Calvert, M., Kyte, D., Price, G., Valderas, J. M., & Hjollund, N. H. (2019). Maximising the impact of patient reported outcome assessment for patients and society. BMJ, 364, k5267. https://doi.org/10.1136/bmj.k5267

Cappelleri, J. C., Jason Lundy, J., & Hays, R. D. (2014). Overview of classical test theory and item response theory for the quantitative assessment of items in developing patient-reported outcomes measures. Clinical Therapeutics, 36(5), 648–662. https://doi.org/10.1016/j.clinthera.2014.04.006

Charfi, N., Elleuch, S., Smaoui, N., Bouali, M. M., Zouari, L., Dammak, M., Mhiri, C., Thabet, J. Ben, & Maalej, M. (2021). Emotional outcomes in tunisian stroke survivors. European Psychiatry, 64(Suppl 1), S242. https://doi.org/10.1192/J.EURPSY.2021.649

Che, B., Shen, S., Zhu, Z., Wang, A., Xu, T., Peng, Y., Li, Q., Ju, Z., Geng, D., Chen, J., He, J., Zhang, Y., & Zhong, C. (2020). Education Level and Long-term Mortality, Recurrent Stroke, and Cardiovascular Events in Patients With Ischemic Stroke. *Journal of the American Heart Association: Cardiovascular and Cerebrovascular Disease*, *9*(16), e016671. https://doi.org/10.1161/JAHA.120.016671

Chen, Q., Beal, E. W., Okunrintemi, V., Cerier, E., Paredes, A., Sun, S., Olsen, G., & Pawlik, T. M. (2018). The Association Between Patient Satisfaction and Patient-Reported Health Outcomes. *Journal of Patient Experience*, *6*(3), 201. https://doi.org/10.1177/2374373518795414

Chen, Y-W., Lin, K-C., Li, Y-C., & Lin, C-J. (2023). Predicting patient-reported outcome of activities of daily living in stroke rehabilitation: a machine learning study. Journal of NeuroEnginnering and Rehabilitation, 20(25). https://jneuroengrehab.biomedcentral.com/articles/10.1186/s12984-023-01151-6

Cheng, Y., Lin, Y., Shi, H., Cheng, M., Zhang, B., Liu, X., Shi, C., Wang, Y., Xia, C., & Xie, W. (2024). Projections of the Stroke Burden at the Global, Regional, and National Levels up to 2050 Based on the Global Burden of Disease Study 2021. Journal of the American Heart Association, 13(23), e036142. https://doi.org/10.1161/JAHA.124.036142/SUPPL_FILE/JAH310359-SUP-0001-SUPINFO.PDF

Chimatiro, G. L., Rhoda, A. J., & De Wit, L. (2018). Stroke patients' outcomes and satisfaction with care at discharge from four referral hospitals in Malawi: A cross-sectional descriptive study in limited resource. Malawi Medical Journal: the Journal of Medical Association of Malawi, 30(3), 152–158. https://doi.org/10.4314/mmj.v30i3.4

Chiu, D., Peterson, L., Elkind, M. S. V., Rosand, J., Gerber, L. M., & Silverstein, M. D. (2010). Comparison of Outcomes after Intracerebral Hemorrhage and Ischemic Stroke. *Journal of Stroke and Cerebrovascular Diseases*, *19*(3), 225–229. https://doi.org/10.1016/j.jstrokecerebrovasdis.2009.06.002

Chun, H. Y., Ford, A., Kutlubaev, M. A., Almeida, O. P., & Mead, G. E. (2022). Depression, anxiety, and suicide after stroke: A narrative review of the best available evidence. Stroke, 53(4), 1402-1410. https://doi.org/10.1161/strokeaha.121.035499

Churruca, K., Pomare, C., Ellis, L. A., Long, J. C., Henderson, S. B., Murphy, L. E., ... & Braithwaite, J. (2021). Patient-reported outcome measures (PROMs): a review of generic and condition-specific measures and a discussion of trends and issues. Health Expectations, 24(4), 1015-1024.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. Psychological Assessment, 7(3), 309–319.

Cramm, J. M., Strating, M. M., & Nieboer, A. P. (2012). Satisfaction with care as a quality-of-life predictor for stroke patients and their caregivers. Quality of life Research: An International Journal of Quality of life Aspects of Treatment, Care and Rehabilitation, 21(10), 1719–1725. **https://doi.org/10.1007/s11136-011-0107-1**

Dossa, A., Glickman, M. E., & Berlowitz, D. (2011). Association between mental health conditions and rehospitalization, mortality, and functional outcomes in patients with stroke following inpatient rehabilitation. BMC Health Services Research, 11(1). https://doi.org/10.1186/1472-6963-11-311

Dromerick, A. W., Geed, S., Barth, J., Brady, K., Giannetti, M. L., Mitchell, A., Edwardson, M. A., Tan, M. T., Zhou, Y., Newport, E. L., & Edwards, D. F. (2021). Critical Period after Stroke Study (CPASS): A phase II clinical trial testing an optimal time for motor recovery after stroke in humans. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(39). https://doi.org/10.1073/pnas.2026676118

Elayoubi, J., Haley, W. E., Nelson, M. E., & Hueluer, G. (2023). How Social Connection and Engagement Relate to Functional Limitations and Depressive Symptoms Outcomes After Stroke. *Stroke*, *54*(7), 1830–1838. https://doi.org/10.1161/STROKEAHA.122.042386/SUPPL_FILE/STR_STROKE-2022-042386_SUPP1.PDF

El-Hajj, M., Salameh, P., Rachidi, S., & Hosseini, H. (2016). The epidemiology of stroke in the Middle East. European Stroke Journal, 1(3), 180-198. https://doi.org/10.1177/2396987316654338

ElMokhallalati, Y., Alaloul, E., Shatat, M., Shneewra, T., El Massri, S., Shaer, O., Relton, S., Abu-Odah, H., & Allsop, M. J. (2022). The Symptom Burden and Quality of life in Cancer Patients in the Gaza Strip, Palestine: A Cross-Sectional Study. PloS one, 17(1), e0262512. https://doi.org/10.1371/journal.pone.0262512

Elrewainy, R. M., Gelany, F. M., Mohammed, N. G., Saad, R. H., Elgohary, O. M., & Elbalawy, Y. (2023). Cognitive Dysfunction in Ischemic versus Hemorrhagic stroke. *Journal of Population Therapeutics and Clinical Pharmacology*, *30*(4), 1–9. https://doi.org/10.47750/JPTCP.2023.30.04.001

Feigin, V. L., Brainin, M., Norrving, B., Martins, S., Sacco, R. L., Hacke, W., Fisher, M., Pandian, J., & Lindsay, P. (2022). World Stroke Organization (WSO): Global stroke fact sheet 2022. International Journal of Stroke, 17(1), 18-29. https://doi.org/10.1177/17474930211065917

Fry, C. H., Fluck, D., & Han, T. S. (2021). Frequent identical admission–readmission episodes are associated with increased mortality. *Clinical Medicine*, *21*(4), e351. https://doi.org/10.7861/CLINMED.2020-0930

Ghoreishi, A., Ahani, M., Asgari, · Masoud, Fazlolah Mousavi, ·, & Nasiri, H. (2024). Comparative analysis of risk factors and clinical outcomes in young patients with acute

ischemic and hemorrhagic stroke. *Discover Medicine 2024 1:1*, *1*(1), 1–13. https://doi.org/10.1007/S44337-024-00103-W

Glimmerveen, A., Holewijn, S., & Vermeer, S. (2023). Association between clinician reported outcome and patient reported outcome measures one year after stroke. Journal of Stroke and Cerebrovascular Diseases, 32(8), 107156. https://doi.org/10.1016/J.JSTROKECEREBROVASDIS.2023.107156

Global Burden of Disease. (2021). Global, regional, and national burden of stroke and its risk factors, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. The Lancet Neurology, 20(10), 795-820. https://www.sciencedirect.com/science/article/pii/S1474442221002520

Grant, C., & Osanloo, A. (2014). Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your "House." Administrative Issues Journal Education Practice and Research, 4(2). https://doi.org/10.5929/2014.4.2.9

Habib, M., Alshounat, M., & Salama, M. (n.d.). Acute Ischemic Stroke Patients for Alteplase or Medical Care Alone or Intervention with/without Alteplase in Palestine (AIS-AMI Palestine). Cardiology and Cardiovascular Medicine, 6(6), 523–528. Retrieved January 17, 2025, from http://www.fotunejournals.com/acute-ischemic-stroke-patients-for-alteplase-or-medical-care-alone-or-intervention-withwithout-alteplase-in-palestine-aisami-pales.html

Handicap International. (2022). Briefing paper: Rehabilitation in the occupied Palestinian territory (oPt). Humanity & Inclusion. https://www.hi.org/sn_uploads/document/Briefing-paper_Rehabilitation_oPt_September-2023_Final-Version.pdf

Harari, Y., O'Brien, M. K., Lieber, R. L., & Jayaraman, A. (2020). Inpatient stroke rehabilitation: prediction of clinical outcomes using a machine-learning approach. Journal of Neuroengineering and Rehabilitation, 17(1), 71. https://doi.org/10.1186/s12984-020- 00704-3

Harb, J. (2020). Critical Policy Brief The Palestinian Health System: Improving its Financing and Enhancing the Quality of its Services. www.pcpsr.org

Hays RD, Bjorner JB, Revicki DA, Spritzer KL, Cella D. Development of physical and mental health summary scores from the patient-reported outcomes measurement information system (PROMIS) global items. Quality of life Research. 2009;18(7):873-880 .

Hewitt, J., Bains, N., Wallis, K., Gething, S., Pennington, A., & Carter, B. (2021). The use of patient-reported outcome measures (PROMs) 6 months post-stroke and their association with the National Institute of Health Stroke Scale (NIHSS) on admission to hospital. Geriatrics, 6(3), 88. https://doi.org/10.3390/geriatrics6030088

Hung, M., Zhang, W., Chen, W., Bounsanga, J., Cheng, C., Franklin, J. D., Crum, A. B., Voss, M. W., & Hon, S. D. (2015). Patient-Reported Outcomes and Total Health Care Expenditure in Prediction of Patient Satisfaction: Results From a National Study. JMIR Public Health and Surveillance, 1(2), e13. https://doi.org/10.2196/publichealth.4360

Islam, M. J., Ahmed, S., Kamrul Islam, K. M., Tina, P. L., Nath, A. D., Biswas, N., Islam, M. S., Dey Shikder, B. J., Al Mamun, M. A., Yasmin, N., & Chakraborty, S. R. (2025). Disability and depression among stroke survivors attending rehabilitation facilities at three designated tertiary care hospitals in Bangladesh: A cross-sectional study. PLOS ONE, 20(1), e0311325. https://doi.org/10.1371/journal.pone.0311325

Jaberinezhad, M., Farhoudi, M., Nejadghaderi, S. A., Alizadeh, M., Sullman, M. J., Carson-Chahhoud, K., Collins, G. S., & Safiri, S. (2022). The burden of stroke and its attributable risk factors in the Middle East and North Africa region, 1990–2019. Scientific Reports, 12(1). https://doi.org/10.1038/s41598-022-06418-x

Jamee Shahwan, A., Abed, Y., Desormais, I., Magne, J., Preux, P. M., Aboyans, V., & Lacroix, P. (2019). Epidemiology of coronary artery disease and stroke and associated risk factors in Gaza community – Palestine. PLOS ONE, 14(1), e0211131. https://doi.org/10.1371/journal.pone.0211131

Jönsson, A. C., Delavaran, H., Iwarsson, S., Ståhl, A., Norrving, B., & Lindgren, A. (2014). Functional status and patient-reported outcome 10 years after stroke: the Lund Stroke Register. Stroke, 45(6), 1784–1790. https://doi.org/10.1161/STROKEAHA.114.005164

Joo, H., George, M. G., Fang, J., & Wang, G. (2014). A literature review of indirect costs associated with stroke. Journal of Stroke and Cerebrovascular Diseases : The Official

Journal of National Stroke Association, 23(7), 1753. https://doi.org/10.1016/J.JSTROKECEREBROVASDIS.2014.02.017

Karim, K., Smerat, S., Owienah, H. F., Khatib, M., Aljamal, M., Ataya, L., Omar, A., Radi, R., Zahran, S., Awwad, N., Arram, R. A., & Abuzahra, M. A. (2025). Patient Pathways During Acute Istishari Arab Hospital Stroke Treatment: A Qualitative Multi-Method Study. CME Journal of Clinical Case Reports, 2(1), 1–8. https://doi.org/10.0/CSS/ALL.CSS

Karisik, A., Bader, V., Moelgg, K., Buergi, L., Dejakum, B., Komarek, S., Boehme, C., Toell, T., Mayer-Suess, L., Sollereder, S., Rossi, S., Meier, P., Schoenherr, G., Willeit, J., Willeit, P., Lang, W., Kiechl, S., Knoflach, M., & Pechlaner, R. (2024). Intensified post-stroke care improves long-term dysphagia recovery after acute ischemic stroke: Results from the STROKE CARD trial. European Stroke Journal. **https://doi.org/10.1177/23969873241284123**

Katan, M., & Luft, A. (2018). Global burden of stroke. Seminars in Neurology, 38(2), 208-211. https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0038-1649503

Katzan, I. L., Thompson, N., Schuster, A., Wisco, D., & Lapin, B. (2021). Patient-reported outcomes predict future emergency department visits and hospital admissions in patients with stroke. Journal of the American Heart Association, 10(6). https://www.ahajournals.org/doi/10.1161/JAHA.120.018794

Khalid, W., Rozi, S., Ali, T. S., Azam, I., Mullen, M. T., Illyas, S., Un-Nisa, Q., Soomro, N., & Kamal, A. K. (2016). Quality of life after stroke in Pakistan. BMC Neurology, 16(1), 250. https://doi.org/10.1186/s12883-016-0774-1

Khan, M., Ahmed, B., Ahmed, M., Najeeb, M., Raza, E., Khan, F., Moin, A., Shujaat, D., Arshad, A., & Kamal, A. K. (2012). Functional, cognitive and psychological outcomes, and recurrent vascular events in Pakistani stroke survivors: A cross sectional study. BMC Research Notes, 5, 89. https://doi.org/10.1186/1756-0500-5-89

Khatib, R., Jawaadah, A. M., Khammash, U., Babiker, A., Huffman, M. D., & Prabhakaran, S. (2018). Presentation, management, and outcomes of acute stroke in Palestine. Journal of the American Heart Association, 7(22), e010778. https://doi.org/10.1161/JAHA.118.010778

Kilkenny, M. F., Dalli, L. L., Kim, J., Sundararajan, V., Andrew, N. E., Dewey, H. M., Johnston, T., Alif, S. M., Lindley, R. I., Jude, M., Blacker, D., Gange, N., Grimley, R., Katzenellenbogen, J. M., Thrift, A. G., Lannin, N. A., & Cadilhac, D. A. (2020). Factors Associated With 90-Day Readmission After Stroke or Transient Ischemic Attack: Linked Data From the Australian Stroke Clinical Registry. *Stroke*, *51*(2), 571–578. https://doi.org/10.1161/STROKEAHA.119.026133/SUPPL_FILE/STROKE2019026133.PDF

Kim, M. S., Hickman, L., Mun, K. T., Sanossian, N., Starkman, S., Avila, G., Sharma, L. K., Liebeskind, D. S., Conwit, R. A., Hamilton, S., & Saver, J. L. (2024). Abstract 91: Patients With Intracranial Hemorrhage Have Greater Post-Stroke Mood Disturbance Than Those With Ischemic Stroke. *Stroke*, *55*(Suppl_1). https://doi.org/10.1161/STR.55.SUPPL_1.91

Langstrup, H. (2018). Patient-reported data and the politics of meaningful data work. Health Informatics Journal, 25(3), 567-576. https://doi.org/10.1177/1460458218820188

Lapin, B. R., Honomichl, R. D., Thompson, N. R., Sugano, D., Udeh, B., Katzan, I. L. (2019). Association between patient experience with patient-reported outcome measurements and overall satisfaction with care in neurology. Notions of Value in Healthcare, 22(5), 555-563. https://www.valueinhealthjournal.com/article/S1098-3015(19)30121-4/fulltext

Lee, H-C., Chang, K-C., Huang, Y-C., Hung, J-W., Chiu, H-H. E., Chen, J-J., & Lee., T-H. (2013). Readmission, mortality, and first-year medical costs after stroke. Journal of the Chinese Medical Association, 76(12), 703-714. https://www.sciencedirect.com/science/article/pii/S1726490113002013

Lin, F. H., Yih, D. N., Shih, F. M., & Chu, C. M. (2019). Effect of social support and health education on depression scale scores of chronic stroke patients. *Medicine*, *98*(44), e17667. https://doi.org/10.1097/MD.0000000000017667

Lisabeth, L. D., Sánchez, B. N., Baek, J., Skolarus, L. E., Smith, M. A., Garcia, N., Brown, D. L., & Morgenstern, L. B. (2014). Neurological, functional, and cognitive stroke outcomes in Mexican Americans. Stroke, 45(4), 1096-1101. https://doi.org/10.1161/strokeaha.113.003912

Lombardo, C., & Islam, M. S. (2023). Stroke survivors' acceptance and satisfaction of telerehabilitation delivery of physiotherapy services: A systematic review. Physical Therapy Reviews, 28(4-6), 261-277. https://doi.org/10.1080/10833196.2023.2271301

Lucas-Noll, J., Clua-Espuny, J. L., Lleixà-Fortuño, M., Gavaldà-Espelta, E., Queralt-Tomas, L., Panisello-Tafalla, A., & Carles-Lavila, M. (2023). The costs associated with stroke care continuum: A systematic review. Health Economics Review, 13(1). https://doi.org/10.1186/s13561-023-00439-6

Magalhães, R., Abreu, P., Correia, M., Whiteley, W., Silva, M. C., & Sandercock, P. (2014). Functional status three months after the first ischemic stroke is associated with long-term outcome: Data from a community-based cohort. *Cerebrovascular Diseases*, *38*(1), 46–54. https://doi.org/10.1159/000364938,

Malkawi, S. H., Amro, A. F., & Jaber, A. F. (2024). Quality of life among Individuals with Stroke in Jordan. *Jordan Medical Journal*, *58*(1), 69–79. https://doi.org/10.35516/JMJ.V58I1.281

Martin, S. S., Aday, A. W., Almarzooq, Z. I., Anderson, C. A. M., Arora, P., Avery, C. L., Baker-Smith, C. M., Barone Gibbs, B., Beaton, A. Z., Boehme, A. K., Commodore-Mensah, Y., Currie, M. E., Elkind, M. S. V., Evenson, K. R., Generoso, G., Heard, D. G., Hiremath, S., Johansen, M. C., Kalani, R., … Palaniappan, L. P. (2024). 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data from the American Heart Association. Circulation, 149(8), E347–E913. https://doi.org/10.1161/CIR.0000000000001209/SUPPL_FILE/SUB-SAHARAN

Martins, S. C. O., Borelli, W. V., Secchi, T. L., Mantovani, G. P., Pille, A., Cuervo, D. L., … Nasi, L. A. (2022). Disparities in stroke patient-reported outcomes measurement between healthcare systems in Brazil. Frontiers in Neurology, 13. https://www.frontiersin.org/articles/10.3389/fneur.2022.857094/full

Marzorati, C., & Pravettoni, G. (2017). Value as the key concept in the health care system: How it has influenced medical practice and clinical decision-making processes. Journal of Multidisciplinary Healthcare, 10, 101–106. https://doi.org/10.2147/JMDH.S122383

MOH. (2022). Annual Health Report 2022. https://site.moh.ps/index/Books/BookType/2/Language/ar

Mourits, B. M. P., den Hartog, S. J., de Graaf, J. A., Roozenbeek, B., Post, M. W. M., Visser-Meily, J. M. A., & Scholten, E. W. M. (2024). Exploring patients' experience using PROMs within routine post-discharge follow-up assessment after stroke: a mixed methods approach. Journal of Patient-Reported Outcomes, 8(1), 1–10. https://doi.org/10.1186/S41687-024-00724-W/FIGURES/3

Myint, P. K., O Bachmann, M., Loke, Y. K., D Musgrave, S., Price, G. M., Hale, R., Metcalf, A. K., Turner, D. A., Day, D. J., A Warburton, E., & Potter, J. F. (2017). Important factors in predicting mortality outcome from stroke: Findings from the Anglia Stroke Clinical Network evaluation study. Age and Ageing, 46(1), 83–90. https://doi.org/10.1093/ageing/afw175

Naveed, H., Almasri, M., Kazani, B., Nauman, A., Akhtar, N., Singh, R., Kamran, S., Al Jerdi, S., Thermalingem, S., & Shuaib, A. (2023). Women and stroke: disparities in clinical presentation, severity, and short- and long-term outcomes. *Frontiers in Neurology*, *14*, 1147858. https://doi.org/10.3389/FNEUR.2023.1147858/BIBTEX

Nguyen, T. H., Lee, C. S., & Kim, M. T. (2022). Using item response theory to develop and refine patient-reported outcome measures. European Journal of Cardiovascular Nursing, 21(5), 509-515. https://doi.org/10.1093/eurjcn/zvac020

Paprocka-Borowicz, M., Wiatr, M., Ciałowicz, M., Borowicz, W., Kaczmarek, A., Marques, A., & Murawska-Ciałowicz, E. (2021). Influence of physical activity and socio-economic status on depression and anxiety symptoms in patients after stroke. International Journal of Environmental Research and Public Health, 18(15), 8058. https://doi.org/10.3390/ijerph18158058

Pinter, D., Fandler-Höfler, S., Fruhwirth, V., Berger, L., Bachmaier, G., Horner, S., Eppinger, S., Kneihsl, M., Enzinger, C., & Gattringer, T. (2022). Relevance of Cognition and Emotion for Patient-Reported Quality of life After Stroke in Working Age: An Observational Cohort Study. Frontiers in Neurology, 13, 869550. https://doi.org/10.3389/FNEUR.2022.869550/BIBTEX

Rao, A., Barrow, E., Vuik, S., Darzi, A., & Aylin, P. (2016). A systematic review of hospital readmissions in stroke patients. Stroke Research and Treatment, 2016, 1-11. https://doi.org/10.1155/2016/9325368

Rathome, F. A. (2015). The need and roadmap for stroke rehabilitation guidelines in Pakistan. Pakistan Journal of Neurological Sciences (PJNS), 10(2). https://core.ac.uk/download/pdf/47262465.pdf

Reeves, M., Lisabeth, L., Williams, L., Katzan, I., Kapral, M., Detsch, A., & Prvu-Bettger, J. (2018). Patient-reported outcome measures (PROMs) for acute stroke: rationale, methods and future directions. Stroke, 49(6), 1549-1556. https://www.ahajournals.org/doi/full/10.1161/STROKEAHA.117.018912

Rimmele, D. L., Lebherz, L., Frese, M., Appelbohm, H., Bartz, H. J., Kriston, L., Gerloff, C., Härter, M., & Thomalla, G. (2020). Health-related Quality of life 90 days after stroke assessed by the International Consortium for Health Outcome Measurement standard set. *European Journal of Neurology*, *27*(12), 2508–2516. https://doi.org/10.1111/ENE.14479

Robinson, G. (2012). Psychological management of stroke N.B. Lincoln, I.I. Kneebone, J.A.B. Macniven and R.C. Morris. John Wiley & Sons, Inc., Milton, Queensland, 2011. 638 pp. ISBN 978-0-470-68427-6 (hardcover). A$135.00. *Australasian Journal on Ageing*, *31*(3), 204–204. https://doi.org/10.1111/J.1741-6612.2012.00631.X/ABSTRACT

Rössler, R., Bridenbaugh, S. A., Engelter, S. T., Weibel, R., Infanger, D., Giannouli, E., Sofios, A., Iendra, L., Portegijs, E., Rantanen, T., Streese, L., Hanssen, H., Roth, R., Schmidt-Trucksäss, A., Peters, N., & Hinrichs, T. (2020). Recovery of mobility function and life-space mobility after ischemic stroke: The MOBITEC-stroke study protocol. BMC Neurology, 20(1). https://doi.org/10.1186/s12883-020-01920-z

Salinas J, Sprinkhuizen SM, Ackerson T, et al. An International Standard Set of Patient-Centered Outcome Measures After Stroke. Stroke. 2016;47(1):180-186.

Sanchez-Gavilan, E., Montiel, E., Baladas, M., Lallanas, S., Aurin, E., Watson, C., Gutierrez, M., Cossio, Y., Ribo, M., Molina, C. A., & Rubiera, M. (2022). Added value of patient-reported outcome measures (PROMs) after an acute stroke and early predictors of 90 days PROMs. Journal of Patient-Reported Outcomes, 6(1), 66. https://doi.org/10.1186/s41687-022-00472-9

Shewangizaw, S., Fekadu, W., Gebregzihabhier, Y., Mihretu, A., Sackley, C., & Alem, A. (2023). Impact of depression on stroke outcomes among stroke survivors:

Systematic review and meta-analysis. PLOS ONE, 18(12), e0294668. https://doi.org/10.1371/journal.pone.0294668

Solberg, L. I., Asche, S. E., Butler, J., Carrell, D., Norton, C. K., Jarvik, J. G., Smith-Bindman, R., Tillema, J. O., Whitebird, R. R., & Ziegenfuss, J. Y. (2015). The effect of achieving patient-reported outcome measures on satisfaction. Journal of the American Board of Family Medicine: JABFM, 28(6), 785–792. https://doi.org/10.3122/jabfm.2015.06.150079

Sweileh, W. M., Sawalha, A. F., Al-Aqad, S. M., Zyoud, S. H., & Al-Jabi, S. W. (2008). The epidemiology of stroke in northern palestine: a 1-year, hospital-based study. Journal of Stroke and Cerebrovascular Diseases : The Official Journal of National Stroke Association, 17(6), 406–411. https://doi.org/10.1016/J.JSTROKECEREBROVASDIS.2008.06.008

Syafii Harahap, H., Indrayana, Y., & Asih Putri, S. (2021). Relationship between level of education and post-stroke cognitive status in hospital-based ischemic stroke survivors. MNJ (Malang Neurology Journal), 7(1), 1-6. https://doi.org/10.21776/ub.mnj.2021.007.01.1

Szelenberger, R., Kostka, J., Saluk-Bijak, J., & Miller, E. (2020). Pharmacological interventions and rehabilitation approach for enhancing brain self-repair and stroke recovery. Current Neuropharmacology, 18(1), 51–64. https://doi.org/10.2174/1570159X17666190726104139

Telebuh, M., Havelka, M., Bertić, Ž., Čovčić, G. G., Grubišić, M., Jakuš, L., Žura, N., Horvat Tišlar, M., Begić, M., Njegovan-Zvonarević, T., Pulić, E., & Jurak, I. (2025). Functional mobility and depression negatively impact Quality of life in older adults with stroke. NeuroRehabilitation: An International, Interdisciplinary Journal. https://doi.org/10.1177/1053813524129137

Thakkar, H. K., Liao, W. W., Wu, C. Y., Hsieh, Y. W., & Lee, T. H. (2020). Predicting clinically significant motor function improvement after contemporary task-oriented interventions using machine learning approaches. Journal of Neuroengineering and Rehabilitation, 17(1), 131. https://doi.org/10.1186/s12984-020-00758-3

Walker, L., Jamrozik, K., & Wingfield, D. (2005). The Sherbrooke questionnaire predicts use of emergency services. Age and Ageing, 34(3), 233-237. https://doi.org/10.1093/ageing/afi020

World Health Organization. (2014). *Health system profile: The Occupied Palestinian Territory 2012* (WHO-EM/PHP/054/E). World Health Organization Regional Office for the Eastern Mediterranean. https://applications.emro.who.int/dsaf/EMROPUB_2014_EN_1746.pdf

Yuan, S., & He, Y. (2019). Effects of physical therapy on mental function in patients with stroke. *The Journal of International Medical Research*, *48*(2), 0300060519861164. https://doi.org/10.1177/0300060519861164

Zeng, Y. Y., Cheng, H. R., Cheng, L., Huang, G. Q., Chen, Y. Bin, Tang, W. J., & He, J. C. (2021). Comparison of poststroke depression between acute ischemic and hemorrhagic stroke patients. *International Journal of Geriatric Psychiatry*, *36*(4), 493–499. https://doi.org/10.1002/GPS.5444

Appendices

Appendix A: Questionnaire

نموذج الموافقة على المشاركة في البحث العلمي

عنوان الدراسة: من تقارير المرضى الى مسارات التعافي: نتائج رعاية السكتة الدماغية في المستشفيات الفلسطينية.

اسم الباحث الرئيسي: براءة صلاح صالح حمايل
اسم المشرف على البحث : د شاهيناز النجار
برنامج ماجستير ادارة الجودة بالمؤسسات الطبية
الجامعة العربية الأمريكية

عزيزي المشارك:

أنت مدعو للمشاركة في هذا الاستبيان لقياس و تحديد العلاقة بين النتائج التي يبلّغ عنها المرضى والتعافي الوظيفي، ومعدلات إعادة الإدخال إلى المستشفى، ومستوى الرضا عن الرعاية المقدمة للجلطات الدماغية في المستشفيات الفلسطينية.

تهدف هذه الدراسة إلى تقييم نظام القياس الذاتي لنتائج المرضى في حالات السكتة الدماغية. لتعزيز وتحسين العناية بمرضى السكتة الدماغية. ، وحيث سيتم استخدام هذه المعلومات لأغراض البحث العلمي فقط.

طريقة اجراء الدراسة:

الدراسة تشمل إجراء الاستبيان التالي والذي يستهدف مرضى الجلطات الدماغية

طريقة التواصل مع الباحث:
يمكنك التواصل مع الباحثة عن طريق (رقم الهاتف0593222223) أو عنوان البريد الالكتروني b.hamayel@student.aaup.edu اذا كانت لديك بعض الأسئلة عن الدراسة.

حماية خصوصية المشارك و سرية المعلومات:
جميع المعلومات التي سوف تجمع من الاستبيانات هي سرية للغاية و تستعمل فقط لغرض البحث العلمي و لن يتم نشر أي معلونات شخصية عن المشاركين بالبحث , مع امكانية المشارك بالانسحاب بأي وقت

موافقة أو توقيع المشارك في البحث:
حصلت على شرح مفصل عن الدراسة وأهدافها وإجراءاتها وعن الحرية الكاملة للمشاركة.
أفهم كل المعلومات التي قدمت ووصلتني إجابة على كل أسئلتي.

أوافق على أن أشارك في هذه الدراسة بطوعية وبدون أي نوع من الاجبار أو الضغوط. أفهم ان بإمكاني التوقف عن المشاركة في أي وقت.

الاسم: _____ التوقيع:

_____التاريخ:_____

الجزء الأول: معلومات عامة وديموغرافية

١	**العمر**	_____				
٢	**الجنس**	☐ ذكر			☐ أنثى	
٣	**مستوى التعليم**	☐ لا يوجد تعليم رسمي	☐ المدرسة الاساسية	☐ المدرسة الثانوية	☐ درجة الدبلوم الجامعي المعتمد (درجة مدتها سنتان)	☐ البكالوريوس	☐ درجة الدراسات العليا (الماجستير أو الدكتوراه)
٤	**نوع السكتة الدماغية**	السكتة الدماغية النزفية (Hemorrhagic Stroke)			النوبة الإقفارية العابرة (Transient Ischemic Attack - TIA)		
٥	**مدة الإقامة في**	☐ 0-7 أيام	☐ 8-14 يوم		☐ 15-30 يوم	☐ أكثر من 30 يوم	

	المست شفى (بالأيام)				
٦	**هل تم إدخالك إلى المستشفى مرة أخرى بعد الخروج؟**	☐ نعم		☐لا	
٧	**إذا كانت الإجابة "نعم"، كم مرة تم إدخالك إلى المستشفى**				
٨	**نوع المست شفى**	☐ حكومي		☐ خاص	
٩	**نوع التأمين الطبي**	☐ حكومي	☐ خاص	☐ لا يوجد		
١٠	**الدخل الشهري بالشيكل**	☐ 0-2000 شيكل	☐2001-4000 شيكل	☐ 4001-6000 شيكل	☐6001 شيكل و اكثر
١١	**نوع السكن**	☐ أعيش وحيداً	☐ أعيش مع الزوج/ة	☐ أعيش مع جميع أفراد الأسرة	☐ أعيش مع مقدم الرعاية الصحية	☐ أعيش في دار للرعاية الصحية
١٢	**موقع المست شفى**	وسط الضفة الغربية	شمال الضفة الغربية	جنوب الضفة الغربية	

	الجغرا في			

الجزء الثاني: رضا المريض

الرجاء الإجابة على الأسئلة التالية بخصوص رضاك عن مختلف جوانب الرعاية الصحية التي تلقيتها. ضع دائرة في المربع المجاور للبند الذي يصف تجربتك بشكل أفضل

	ما درجة رضاك أو عدم رضاك:	راضٍ جدًا	راضٍ	لا أعرف	غير راضٍ	غير راضٍ تمامًا
١	**عن الرعاية التي تلقيتها في غرفة الطوارئ فيما يتعلق بسكتة الدماغ**	5	4	3	2	1
٢	**عن الرعاية التي تلقيتها في أقسام المستشفى فيما يتعلق بسكتة الدماغ**	5	4	3	2	1
٣	**عن طريقة التعامل معك من قِبل مقدمي الرعاية الصحية فيما يتعلق بكرامتك واحترامك في المستشفى بسبب سكتة الدماغ**	5	4	3	2	1

الجزء الثالث: التأهيل والتدريب

الرجاء الإجابة على الأسئلة التالية بخصوص التأهيل والتدريب الذي تلقيته. ضع دائرة في المربع المجاور للبند الذي يصف تجربتك بشكل أفضل.

التأهيل أو التدريب يشير إلى التمارين لتحسين أو الحفاظ على القدرة على التعامل مع الحياة اليومية. (على سبيل المثال، القدرة على الحركة، وارتداء وخلع الملابس، والذهاب إلى الحمام، والقدرة على التحدث والقراءة والعد، والقدرة على التركيز، الطهي، إلخ. ما درجة رضاك أو عدم رضاك عن العلاج التأهيلي أو التدريب (لتحسين حياتك مثل استخدام الحمام، الاستحمام، الحركة، إلخ)		
١	**أثناء الإقامة في المستشفى فيما يتعلق بالسكتة الدماغية؟**	• غير راضٍ تماما • غير راضٍ • لا اعرف

		• كنت بحاجة ولكن لم أحصل على إعادة تأهيل أو تدريب اثناء الاقامة في المستشفى • لم أكن بحاجة إلى إعادة تأهيل أو تدريب اثناء الإقامة في المستشفى • راضٍ • راضٍ جدًا
٢	**بعد خروجك من المستشفى بسبب السكتة الدماغية؟**	• غير راضٍ تماما • غير راضٍ • لا اعرف • كنت بحاجة ولكن لم أحصل على إعادة تأهيل أو تدريب بعد خروجي من المستشفى • لم أكن بحاجة إلى إعادة تأهيل أو تدريب بعد خروجي من المستشفى • راضٍ • راضٍ جدًا
٣	**اين تلقيت إعادة التأهيل بعد السكتة الدماغية أو التدريب بعد الخروج من المستشفى؟**	_____

الجزء الرابع: التعافي الوظيفي

الرجاء الإجابة على الأسئلة التالية بخصوص التعافي الوظيفي. ضع علامة "X" في المربع المجاور للبند الذي يصف تجربتك بشكل أفضل.

١	**كيف هي حركتك الآن؟**	• يمكنني التجول في الداخل والخارج دون مساعدة شخص آخر • يمكنني التجول في الداخل ، ولكن ليس في الهواء الطلق بدون مساعدة حيث احتاج الى مساعدة شخص آخر • أحصل على مساعدة من شخص آخر للتنقل في الداخل والخارج
٢	**هل تحتاج إلى مساعدة من شخص ما لزيارة المرحاض؟**	• انا قادر على استخدام الحمام بشكل مستقل • أحتاج إلى مساعدة لاستخدام المرحاض
٣	**هل تحتاج إلى مساعدة في ارتداء الملابس وخلعها؟**	• يمكنني أن أرتدي ملابسي وخلع ملابسي بنفسي • أحتاج إلى مساعدة في ارتداء ملابسي وخلع ملابسي
٤	**هل تحتاج إلى أنبوب للتغذية؟**	• نعم • لا
٥	**هل لديك مشكلة في التواصل أو الفهم؟**	• نعم • لا

الجزء الخامس: نتائج الرعاية المرتبطة بالمريض

يرجى تقديم ملاحظاتك حول نتائج الرعاية المرتبطة بالمريض المختلفة. يرجى تحديد ردك عن طريق وضع دائرة في المربع المجاور للبيان الذي يعكس تجربتك بشكل أفضل.

		ممتازة	جيدة جدًا	جيدة	معتدلة	سيئة
١	بشكل عام، كيف تقيم صحتك؟	5	4	3	2	1
٢	بشكل عام، كيف تقيم جودة حياتك؟	5	4	3	2	1
٣	بشكل عام، كيف تقيم صحتك البدنية؟	5	4	3	2	1
٤	الصحة العقلية هي "حالة السعادة والراحة التي يدركها الفرد لقدراته الشخصية، ويستطيع التعامل مع ضغوط الحياة العادية، ويستطيع العمل بإنتاجية وبنجاح، وقادر على المساهمة في مجتمعه". بشكل عام، كيف تقيم صحتك العقلية، بما في ذلك **مزاجك؟**	5	4	3	2	1
٥	الصحة العقلية هي "حالة السعادة والراحة التي يدركها الفرد لقدراته	5	4	3	2	1

	الشخصية، ويستطيع التعامل مع ضغوط الحياة العادية، ويستطيع العمل بإنتاجية وبنجاح، وقادر على المساهمة في مجتمعه". بشكل عام، كيف تقيم صحتك العقلية، بما في ذلك **قدرتك على التفكير؟**					
٦	بشكل عام، كيف تقيّم **رضاك عن أنشطتك الاجتماعية وعلاقاتك؟**	5	4	3	2	1
٧	بشكل عام، يُرجى تقييم مدى تمكنك من أداء **أنشطتك وأدوارك الاجتماعية** المعتادة. (يشمل ذلك الأنشطة في المنزل وفي العمل وفي مجتمعك، والمسؤوليات كوالد، وطفل، وزوج، وموظف، وصديق، وما إلى ذلك).	5	4	3	2	1
٨	إلى أي مدى يمكنك أداء **أنشطتك**	على الإطلاق	قليلًا	بشكل معتدل	بشكل كبير	تمامًا

	الجسدية اليومية مثل المشي، تسلق السلالم، حمل البقالة، أو نقل كرسي؟					

الجزء السادس: الراحة النفسية

يرجى الإجابة على الأسئلة التالية بخصوص الراحة النفسية الخاصة بك. ضع علامة "X" في المربع المجاور للبند الذي يصف تجربتك بشكل أفضل.

١	**كم مرة تتضايق من المشاكل العاطفية مثل الشعور بالقلق أو الاكتئاب أو الانفعال؟**	• ابدًا	• نادرًا	• احياناً	• غالباً	• دائماً
٢	**كيف تقيّم مستوى التعب الذي تشعر به في المتوسط؟**	• لا يوجد	• ضعيف	• متوسط	• شديد	• شديد جدًا
٣	**كيف تقيّم مستوى الألم الذي تشعر به في المتوسط؟**	• 0+ • 1+ • 2+ • 3+ • 4+ • 5+ • 6+ • 7+ • 8+ • 9+ • 10+				

لقد وصلت الى نهاية الاستبيان

شكراً لمساهمتك

Appendix B: The Sources of The Questionnaire Items

Question	Answers	السؤال	الأجوبة	Source
How satisfied or dissatisfied are you with the care you received in the Emergency room in connection with your stroke?	I___I Very satisfied I___I Satisfied I___I Dissatisfied I___I Very dissatisfied I___I Don't know	ما درجة رضاك أو عدم رضاك عن الرعاية التي تلقيتها في غرفة الطوارئ فيما يتعلق بسكتة الدماغ؟	I___I راضٍ جدًا I___I راضٍ I___I غير راضٍ I___I غير راضٍ تمامًا I___I لا أعرف	RIKSSTROKE
How satisfied or dissatisfied are you with the care you received in the Hospital wards in connection with your stroke?	I___I Very satisfied I___I Satisfied I___I Dissatisfied I___I Very dissatisfied I___I Don't know	ما درجة رضاك أو عدم رضاك عن الرعاية التي تلقيتها في أقسام المستشفى فيما يتعلق بسكتة الدماغ؟	I___I راضٍ جدًا I___I راضٍ I___I غير راضٍ I___I غير راضٍ تمامًا I___I لا أعرف	RIKSSTROKE
How satisfied or dissatisfied	I___I Very satisfied	ما درجة رضاك أو	I___I راضٍ جدًا	RIKSSTROKE

Question	Answers	السؤال	الأجوبة	Source
are you with the way healthcare providers dealt with you regarding dignity and respect in connection with your stroke?	I___I Satisfied I___I Dissatisfied I___I Very dissatisfied I___I Don't know	عدم رضاك عن طريقة التعامل معك من قِبل مقدمي الرعاية الصحية فيما يتعلق بكرامتك واحترامك في المستشفى بسبب سكتة الدماغ؟	I___I راضٍ I___I غير راضٍ I___I غير راضٍ تمامًا I___I لا أعرف	
How satisfied or dissatisfied are you with the discharge consultation from the healthcare provider in the ward where you received care for your stroke?	I___I Very satisfied I___I Satisfied I___I Dissatisfied I___I Very dissatisfied I___I I did not have a discharge consultation with a doctor I___I Don't know	ما درجة رضاك أو عدم رضاك عن استشارة الخروج من مقدمي الرعاية الصحية في القسم الذي تلقيت فيه الرعاية لسكتة الدماغ؟	I___I راضٍ جدًا I___I راضٍ I___I غير راضٍ I___I غير راضٍ تمامًا I___I لم أحصل على استشارة	RIKSSTROKE

Question	Answers	السؤال	الأجوبة	Source
			I___I لا أعرف	
How satisfied or dissatisfied are you with the rehabilitation or training (to improve your life such as using the toilet, bathing, mobility, etc.) while hospitalized in connection with your stroke?	I___I Very satisfied I___I Satisfied I___I Dissatisfied I___I Very dissatisfied I___I I did not need rehabilitation or training during my stay in hospital I___I I needed but did not get rehabilitation or training during my stay in hospital I___I Don't know	ما درجة رضاك أو عدم رضاك عن العلاج التأهيلي أو التدريب (لتحسين حياتك مثل استخدام الحمام، الاستحمام، الحركة، إلخ) أثناء الإقامة في المستشفى فيما يتعلق بالسكتة الدماغية؟	I___I راضٍ جدًا I___I راضٍ I___I غير راضٍ I___I غير راضٍ تمامًا I___I لم أكن بحاجة إلى إعادة تأهيل أو تدريب أثناء إقامتي في المستشفى I___I كنت بحاجة ولكن لم أحصل على إعادة تأهيل أو تدريب	RIKSSTROKE

Question	Answers	السؤال	الأجوبة	Source
			أثناء إقامتي في المستشفى I___I لا أعرف	
Where did you receive the stroke rehabilitation or training after discharge from the hospital?	Open-ended question	أين تلقيت إعادة التأهيل بعد السكتة الدماغية أو التدريب بعد الخروج من المستشفى؟	سؤال مفتوح	RIKSSTROKE
How satisfied or dissatisfied are you with the rehabilitation or training after you were discharged from the hospital for your stroke?	I___I Very satisfied I___I Satisfied I___I Dissatisfied I___I Very dissatisfied I___I I did not need rehabilitation or training after my stay in hospital I___I I	ما درجة رضاك أو عدم رضاك عن العلاج التأهيلي أو التدريب بعد خروجك من المستشفى بسبب السكتة الدماغية؟	I___I راضٍ جدًا I___I راضٍ I___I غير راضٍ I___I غير راضٍ تمامًا I___I لم أكن بحاجة إلى إعادة	RIKSSTROKE

Question	Answers	السؤال	الأجوبة	Source
	needed but did not get rehabilitation or training after my stay in hospital I___I Don't know		تأهيل أو تدريب أثناء إقامتي في المستشفى I___I كنت بحاجة ولكن لم أحصل على إعادة تأهيل أو تدريب أثناء إقامتي في المستشفى I___I لا أعرف	
How is your mobility now?	I___I I can get around both indoors and outdoors without the help of another person I___I I can get around indoors, but not outdoors	كيف هي حركتك الآن؟	I___I يمكنني التجول في الداخل والخارج دون مساعدة شخص آخر I___I يمكنني التجول	RIKSSTROKE

Question	Answers	السؤال	الأجوبة	Source
	without the help of another person I___I I get help from someone else to move around both indoors and outdoors		في الداخل، ولكن ليس في الهواء الطلق بدون مساعدة حيث أحتاج إلى مساعدة شخص آخر I___I أحصل على مساعدة من شخص آخر للتنقل في الداخل والخارج	
Do you need help from someone to visit the toilet?	I___I I can manage to visit the toilet by myself I___I I need help to visit the toilet	هل تحتاج إلى مساعدة من شخص ما لزيارة المرحاض؟	I___I أنا قادر على استخدام الحمام بشكل مستقل I___I أحتاج إلى	RIKSSTROKE

Question	Answers	السؤال	الأجوبة	Source
			مساعدة لاستخدام المرحاض	
Do you need help getting dressed and undressed?	I___I I can manage to get dressed and undressed by myself I___I I need help to get dressed and undressed	هل تحتاج إلى مساعدة في ارتداء الملابس وخلعها؟	I___I يمكنني أن أرتدي ملابسي وخلع ملابسي بنفسي I___I أحتاج إلى مساعدة في ارتداء ملابسي وخلع ملابسي	RIKSSTROKE
Do you need a tube for feeding?	I___I No I___I Yes	هل تحتاج إلى أنبوب للتغذية؟	I___I لا I___I نعم	ICHOM
Do you have a problem with communication or understanding?	I___I No I___I Yes	هل لديك مشكلة في التواصل أو الفهم؟	I___I لا I___I نعم	ICHOM
In general, would you say your health is:	I___I Poor I___I Fair I___I Good I___I Very	بشكل عام، كيف تقيم صحتك:	I___I سيئة I___I معتدلة	PROMIS Global-10

Question	Answers	السؤال	الأجوبة	Source
	Good I___I Excellent		I___I جيدة I___I جيدة جدًا I___I ممتازة	
In general, would you say your quality of life is:	I___I Poor I___I Fair I___I Good I___I Very Good I___I Excellent	بشكل عام، كيف تقيم جودة حياتك:	I___I سيئة I___I معتدلة I___I جيدة I___I جيدة جدًا I___I ممتازة	PROMIS Global-10
In general, how would you rate your physical health?	I___I Poor I___I Fair I___I Good I___I Very Good I___I Excellent	بشكل عام، كيف تقيم صحتك البدنية:	I___I سيئة I___I معتدلة I___I جيدة I___I جيدة جدًا I___I ممتازة	PROMIS Global-10
In general, how would you rate your mental	I___I Poor I___I Fair I___I Good	بشكل عام، كيف تقيم صحتك	I___I سيئة I___I	PROMIS Global-10

Question	Answers	السؤال	الأجوبة	Source
health, including your mood?	I___I Very Good I___I Excellent	العقلية، بما في ذلك مزاجك؟	معتدلة I___I جيدة I___I جيدة جدًا I___I ممتازة	
In general, how would you rate your mental health, including your ability to think?	I___I Poor I___I Fair I___I Good I___I Very Good I___I Excellent	بشكل عام، كيف تقيم صحتك العقلية، بما في ذلك قدرتك على التفكير؟	I___I سيئة I___I معتدلة I___I جيدة I___I جيدة جدًا I___I ممتازة	PROMIS Global-10
In general, how would you rate your satisfaction with your social activities and relationships?	I___I Poor I___I Fair I___I Good I___I Very Good I___I Excellent	بشكل عام، كيف تقيّم رضاك عن أنشطتك الاجتماعية وعلاقاتك؟	I___I سيئة I___I معتدلة I___I جيدة I___I جيدة جدًا I___I ممتازة	PROMIS Global-10
In general, please rate how	I___I Poor I___I Fair	بشكل عام، يُرجى تقييم	I___I سيئة	PROMIS Global-10

Question	Answers	السؤال	الأجوبة	Source
well you carry out your usual social activities and roles.	I___I Good I___I Very Good I___I Excellent	مدى تمكنك من أداء أنشطتك وأدوارك الاجتماعية المعتادة.	I___I معتدلة I___I جيدة I___I جيدة جدًا I___I ممتازة	
To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?	I___I Not at all I___I A little I___I Moderately I___I Mostly I___I Completely	إلى أي مدى يمكنك أداء أنشطتك الجسدية اليومية مثل المشي، تسلق السلالم، حمل البقالة، أو نقل كرسي؟	I___I على الإطلاق I___I قليلًا I___I بشكل معتدل I___I بشكل كبير I___I تمامًا	PROMIS Global-10
How often have you been bothered by emotional problems such as feeling anxious, depressed, or irritable?	I___I Never I___I Rarely I___I Sometimes I___I Often I___I Always	كم مرة تتضايق من المشاكل العاطفية مثل الشعور بالقلق أو	I___I أبدًا I___I نادرًا I___I أحيانًا I___I غالبًا	PROMIS Global-10

Question	Answers	السؤال	الأجوبة	Source
		الاكتئاب أو الانفعال؟	I___I دائمًا	
How would you rate your fatigue on average?	I___I None I___I Mild I___I Moderate I___I Severe I___I Very Severe	كيف تقيّم مستوى التعب الذي تشعر به في المتوسط؟	I___I لا يوجد I___I ضعيف I___I متوسط I___I شديد I___I شديد جدًا	PROMIS Global-10
How would you rate your pain on average?	I___I +0 I___I +1 I___I +2 I___I +3 I___I +4 I___I +5 I___I +6 I___I +7 I___I +8 I___I +9 I___I +10	كيف تقيّم مستوى الألم الذي تشعر به في المتوسط؟	I___I +0 I___I +1 I___I +2 I___I +3 I___I +4 I___I +5 I___I +6 I___I +7 I___I +8	PROMIS Global-10

Question	Answers	السؤال	الأجوبة	Source
			I___I +9 I___I +10	

Appendix C: Questionnaire Validation Experts Panel

Name	Position
Dr Shahenaz Najjar	Research Associate, Department of public health and primary care, KU Leuven University, leuven. Professor, UBI business school, Brussels, Belgium.
Dr. Mohamad Khleif	Assistant Professor, Faculty of Allied Medical Sciences, Palestine Ahliya University
Dr. Atef Al Rimawi	Chief Executive Officer, Istishari Arab Hospital Palestine, Ramallah, Al Rayhan
Dr. Butheina Surkhi	Assistant Professor, School of Public Health, Al-Quds University
Dr. Asma Imam, BSN, MSN, PhD	Associate Professor in Health Management, Coordinator of PhD program in Public Health, Coordinator of Health Policy and Management Masters Program, Al-Quds University
Dr. Zaher Nazzal, MD	Associate Professor / Director of Scientific Research Unit, Department of Family and Community Medicine, An-Najah National University
Dr Hafez Nimer	Neurosurgon,, Specialized Arab Hospital, Palestine

العنوان: من تقارير المرضى إلى مسارات التعافي: نتائج رعاية السكتة الدماغية في المستشفيات الفلسطينية

اسم الطالبة: براءة صلاح صالح حمايل

أسماء لجنة الإشراف: د. شهنار نجّار, د. عماد أبو خضر و د. عبد الله الواوي

الملخص

المقدمة

تُعتبر السكتة الدماغية سبباً رئيسياً للمرض والوفيات على مستوى العالم. في فلسطين، تُشكل السكتة الدماغية 11% من جميع الوفيات، مما يجعلها السبب الثاني للوفاة. تُسبب السكتة الدماغية أعباءً جسدية ونفسية ومالية. تُركز الأساليب الحديثة على ضرورة جمع البيانات مباشرة من المرضى بدلاً من الاعتماد فقط على التقييم السريري.

الأهداف

الهدف الرئيسي هو تقييم العلاقات المتبادلة بين ثلاثة أبعاد من مقاييس النتائج المُبلغ عنها من قِبل المرضى: رضا المرضى، الصحة الجسدية، والصحة النفسية، وعلاقتها بنوع السكتة الدماغية، مدة الإقامة في المستشفى، إدراك الصحة العامة، القدرة على أداء الأدوار الاجتماعية، إعادة الدخول للمستشفى والعوامل الديموغرافية.

المنهجية

تم اعتماد منهج مقطعي في 12 مستشفى حكومي في الضفة الغربية. تم اختيار 100 مريض بالسكتة الدماغية تم علاجهم قبل 90 يوماً من فترة جمع البيانات. يشمل الاستبيان أسئلة من ثلاث أدوات معتمدة: ICHOM ، ومجموعةROMIS-10 القياسية للسكتة الدماغية RIKSSTROKE. تم جمع البيانات من خلال مراجعة السجلات الطبية واستبيان تم إجراؤه عن طريق مقابلات

النتائج

تُشير النتائج إلى وجود فرق بين نتائج الصحة النفسية والجسدية، وعدم وجود فرق في رضا المرضى بين المرضى غير المُعاد إدخالهم للمستشفى (الوسيط = 51.8، الربع الأول–الثالث = 45.0–56.0) والمرضى المُعاد إدخالهم (الوسيط = 51.8، الربع الأول–الثالث = 45.0–56.0)، ومع ذلك، أبلغ المرضى غير المُعاد إدخالهم عن صحة جسدية ونفسية أفضل مقارنة بالمرضى المُعاد إدخالهم (W = 1200.5، p = .134). كان الاتجاه المماثل واضحاً أيضاً في عوامل أخرى مثل عدد مرات الإدخال المتكررة، الفئات العمرية، الجنس، مستوى التعليم، مستوى الدخل، إدراك الصحة العامة، القدرة على أداء الأدوار الاجتماعية ونوع السكتة الدماغية.

الخلاصة

تُؤكد الدراسة على أهمية النهج الشامل لرعاية السكتة الدماغية، حيث وُجدت العلاقة بين نتائج الصحة النفسية والجسدية ثنائية الاتجاه، وبالتالي هناك حاجة للرعاية المتكاملة. بالإضافة، ظهرت إعادة الدخول للمستشفى والجنس الأنثوي والعمر المتقدم والوضع الاجتماعي الاقتصادي المنخفض وضعف إدراك الصحة العامة وضعف القدرة على أداء الأدوار الاجتماعية كمؤشرات على سوء التشخيص. كما اختلفت أنواع السكتة الدماغية في النتائج، وبالتالي تُسلط جميع هذه النتائج الضوء على الحاجة للرعاية الفردية وتحسين الاستراتيجيات المتبعة لتعزيز نتائج السكتة الدماغية في فلسطين.

الكلمات المفتاحية: السكتة الدماغية, مقاييس النتائج المبلّغ عنها من قِبل المرضى
الصحة الجسدية, الصحة النفسية, إعادة الإدخال إلى المستشفى