

Collaborative Relationship of Nurses and occupational Therapists with the Level of Functional Independence of Post-Stroke Patients

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ABSTRACT

Stroke is a major cause of long-term disability, leading to reduced functional ability and increased dependence in Activities of Daily Living (ADL). Interprofessional collaboration supports successful post-stroke rehabilitation, but evidence on nurse–occupational therapist collaboration and patient functional independence remains limited. This study aimed to determine the relationship between nurse–occupational therapist collaboration and functional independence among post-stroke patients. A descriptive correlational study with a cross-sectional design was conducted at Semen Padang Hospital involving 62 post-stroke patients undergoing rehabilitation, selected through purposive sampling. Data were collected using an interprofessional collaboration questionnaire and the Barthel Index. Univariate analysis described variable distributions, while the Chi-Square test assessed the relationship between collaboration and functional independence. The results showed that 38 respondents (61.3%) rated collaboration as good and 24 (38.7%) as less good. Meanwhile, 40 respondents (64.5%) had good functional independence, while 22 (35.5%) remained dependent. Chi-Square analysis demonstrated a significant relationship between interprofessional collaboration and functional independence ($p=0.001$). Strengthening collaboration through rehabilitation team training, effective communication, and standardized procedures is recommended to optimize post-stroke rehabilitation outcomes.

Keywords: Interprofessional Collaboration, Nursing, Occupational Therapy, Functional Independence, Post Stroke



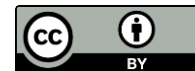
INTRODUCTION

Stroke is the main neurological condition that causes the second highest disability in the world after heart disease, characterized by impaired blood supply to the brain resulting in sudden motor, sensory, and cognitive deficits (Mountain, 2020). Globally, the World Stroke Organization notes that in 2022 there will be approximately 12.2 million new cases of stroke, with 16% of them occurring in the productive age group of 15-49 years, which confirms that stroke is no longer just a threat to the elderly group but has become a cross-generational problem (Yan et al., 2020). In Indonesia, the Indonesian Health Survey (SKI) in 2023 recorded a stroke prevalence of 8.3 per 1,000 population, making stroke the third highest financing burden after heart disease and cancer—reaching Rp5.2 trillion in 2023—and accounting for 11.2% of total disability conditions and 18.5% of total deaths nationwide (Ministry of Health, 2023; Darmawati, 2023; Yudhi, 2024). Regionally, West Sumatra recorded a higher prevalence than the national figure of 8.8 per 1,000 inhabitants, due to high risk factors such as hypertension, unhealthy diet, and low physical activity in the local community (Yozarwardi, 2024; Perbasya, 2022). This high incidence is in line with the magnitude of the impact of disability caused, in the form of motor, sensory, and cognitive disorders that directly inhibit the ability of survivors to carry out daily activities independently, thus making stroke a top priority in health care systems in various countries, including Indonesia (Mountain, 2020).

One of the most striking effects of stroke is a decrease in the patient's ability to perform daily activities (activities of daily living/ADL) independently due to neurological deficits such as hemiparesis, impaired coordination, and decreased muscle strength that make the patient dependent on the help of others for basic activities such as eating, dressing, and moving. This functional dependence not only affects the physical aspects, but also the psychological and social aspects of patients due to decreased self-confidence and independence, so that assessing the level of functional independence is an important component in determining the direction of post-stroke rehabilitation interventions (Putra, 2024; Dhien, 2022).

To objectively measure the level of functional independence of post-stroke patients, the Barthel index is widely used as a standard instrument in various health care facilities because it is able to assess various domains of basic activities, including the ability to urinate, mobilize, dress, and eat, which describes the degree of dependence of patients on the help of others. Assessment using the Barthel index allows health workers to periodically monitor the development of the patient's functional status during the rehabilitation process, making it an important reference in evaluating the effectiveness of nursing interventions and occupational therapy provided (Harjanto & Nurjannah, 2022).

In the post-stroke recovery process, nurses have an important role through various nursing interventions such as activity fulfillment, range of motion (ROM) exercises, and complication prevention education such as pressure sores and falls, which aims to maintain the patient's physical function while preventing secondary complications that can aggravate disability. The application of appropriate nursing care in the early post-stroke phase has been shown to



contribute to the gradual improvement of the patient's functional activity, but nursing intervention alone is not enough to restore the patient's overall independence without the support of other health disciplines (Oxyandi, 2020).

On the other hand, occupational therapy has a special role in training the functional abilities of post-stroke patients through approaches that focus on daily activity skills, such as the Bobath frame of reference widely used in clinical practice to retrain the patient's fine motor skills, coordination and adaptability to the limitations experienced. This approach is designed individually according to the functional needs of each patient so that the results of therapy can be more optimal, and other studies have shown that occupational therapy contributes significantly to improving the performance of activity, independence, and muscle strength of stroke patients as the basis of functional activity (Reza, 2024; Faizal, 2025; Rumambi, 2023).

The results reinforce the argument that the successful recovery of post-stroke patients' independence depends largely on the synergy between nursing and occupational therapy interventions implemented in a coordinated manner, because when the two professions work separately without effective communication, potential overlaps and gaps in interventions can occur and hinder the patient's recovery process. Therefore, interprofessional collaboration between nurses and occupational therapists is a fundamental need in post-stroke rehabilitation services (Faizal, 2025; Rumambi, 2023).

Interprofessional collaboration (IPC) is defined as cooperation between health workers with different educational backgrounds who work together to achieve the same service goals, emphasizing the importance of communication, coordination, and a clear division of roles between health workers in caring for patients, including in the context of post-stroke rehabilitation. A good application of IPC allows each profession to contribute their expertise optimally without neglecting the needs of patients in a holistic manner, so this concept is an important basis in building a structured collaborative relationship between nursing and occupational therapy in hospitals (Ita, et al., 2021).

Various literature reviews have shown that effective implementation of IPC can reduce mortality, prevent complications, speed up the treatment process, and lower overall patient care costs, proving that collaboration among health workers is not just an administrative aspect but a determining factor in patient clinical outcomes. Similar benefits can potentially be obtained if collaboration between nurses and occupational therapists is carried out in a consistent and coordinated manner, so evaluating the quality of cooperation between these two professions is important to ensure that patients get optimal benefits from the rehabilitation process (Nowaczyk, 2021; Kusuma, 2021).

Although the benefits have been widely demonstrated, the implementation of interprofessional collaboration in the field still faces various obstacles, especially the limited communication skills between health workers and the lack of interprofessional education (IPE) training since the education period, which is one of the causes of low readiness of health workers to collaborate effectively after working in hospitals. This communication barrier risks creating



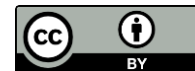
interprofessional discrepancies, including between nurses and occupational therapists, which can ultimately slow down the patient's functional recovery process, so an ongoing evaluation of the pattern of interprofessional cooperation that runs in health care facilities is needed (Lahagu & Nurhidayah, 2023).

Although the benefits have been widely demonstrated, the application of interprofessional collaboration in the field still faces various obstacles, especially related to limited communication skills between health professionals. The lack of interprofessional education (IPE) training since the education period has also become one of the causes of the low readiness of health workers to collaborate effectively after working in hospitals. These communication barriers run the risk of creating miscoordination between professions, including between nurses and occupational therapists, which can ultimately slow down the patient's functional recovery process. This condition confirms the need for continuous evaluation of the pattern of interprofessional collaboration that runs in health care facilities (Lahagu & Nurhidayah, 2023).

A systematic review also confirms that the implications of interprofessional collaboration on nursing services based on a holistic care perspective have a positive impact on the quality of care received by patients as a whole. This holistic approach is relevant applied to post-stroke patients given the complexity of patient needs that include physical, psychological, and functional aspects simultaneously. Strengthening the collaborative model based on community rehabilitation is also proven to support long-term therapeutic management of post-stroke patients in a more integrated manner among health professionals. These collaborative models are an important reference in designing collaborative strategies for nursing and occupational therapy that are more structured in hospitals (Lumbantoruan, 2023; Idris, 2024).

Based on previous research, studies of interprofessional collaboration in stroke patients still focus on collaboration in general between health professions or on the single role of one profession, such as nursing or occupational therapy separately. Research that specifically examines the relationship of collaboration between nurses and occupational therapists with the level of functional independence of post-stroke patients, especially in private hospitals with patient characteristics in the West Sumatra region, is still limited. This gap is also reinforced by the finding that the readiness of health workers to collaborate interprofessionally in Indonesia still varies and requires further strengthening. Therefore, this study aims to determine the relationship of collaboration between nurses and occupational therapists with the level of functional independence of poststroke patients at Semen Padang Hospital (Rachmawati, 2024; Febrian, 2025; Grace, 2021).

The researcher's interest in raising this topic arises from direct observation of the rehabilitation process of post-stroke patients in the field, where researchers see that the success of restoring patient independence is greatly influenced by how well nurses and occupational therapists work together, not just by the expertise of each profession separately. The researchers also found that there is not much empirical evidence that specifically describes the pattern of collaboration between the two professions in private hospitals in West Sumatra, so this study is



expected to contribute more specific and applicable data. Researchers hope that the results of this study can be an evaluation material for hospital management in strengthening the system of interprofessional collaboration, as well as the basis for the preparation of operational policies that support the recovery of post-stroke patient independence more optimally. This interest is stronger because the topic of interprofessional collaboration is considered relevant to the demands of modern health services that promote a multidisciplinary team approach in achieving the best clinical outcomes for patients.

METHODS

This study aims to determine the relationship of cooperation between nurses and occupational therapists with the level of functional independence of post-stroke patients, using a type of quantitative research with descriptive correlational design through a cross sectional approach, where the independent variable (collaboration of nurses and occupational therapists) and the dependent variable (level of functional independence) is measured in one and the same, thus obtained a sample of 62 respondents were taken using purposive sampling techniques based on inclusion criteria, namely patients with subacute to chronic post-stroke aged ≥ 18 years, in a fully conscious condition (*compos mentis*), able to communicate verbally and non-verbally, get nursing and occupational therapy interventions simultaneously during the treatment period, and willing to be a respondent to the study, with exclusion criteria, patients in critical or Hemodynamically Unstable condition, and patients who refuse or withdraw during the data collection process; data collection techniques were conducted through observation and filling questionnaires directly by researchers with respondents and family companions for patients with communication limitations, using two instruments, namely the Interprofessional Collaboration Questionnaire consisting of statements with Likert scale to assess the patient's perception of the quality of cooperation between nurses and occupational therapists, based on the Barthel Index consisting of 10 items of assessment of basic activities (eating, bathing, self-care, dressing, defecation, urination, toilet use, moving places, mobilization / walking, and up and down stairs) with a score range of 0-100, which in the Indonesian version has been proven to be valid and reliable with the value of internal consistency Cronbach's Alpha ≥ 0.896 and correlation items ranging from $r = 0.591-0.846$, so it is feasible to use to assess the level of functional independence of post-stroke patients in carrying out daily activities (activities of daily living).

Data Analysis was conducted through univariate analysis using frequency distribution to describe the characteristics of respondents and categories of each variable, as well as bivariate analysis using Chi-Square test to determine the relationship between interprofessional collaboration with the level of functional independence of post-stroke patients, where each respondent was given a full explanation of the objectives, benefits, procedures, and rights as a research participant, by taking into account the principles of confidentiality of respondents' identity (confidentiality), anonymity of data (anonymity), and the right of respondents to refuse or resign at any time without affecting the services they receive at the hospital.



RESULTS

1. Characteristics of Respondents

The characteristics of the respondents in this study were described based on age, sex, education level, and length of post-stroke time to provide a general description of the patient profile that was the subject of research at Semen Padang Hospital.

Table 1. Characteristics of Respondents

No	Characteristics	Categories	Frequency (n)	Percentage (%)
1	Age	18-45 years old	12	19,4
		46-59 years old	25	40,3
		> 60 years old	25	40,3
2	Gender	Men	34	54,8
		Female	28	45,2
3	Education Level	Primary (SD-SMP)	22	35,5
		Secondary (SMA)	28	45,2
		Higher (Diploma / Bachelor)	12	19,3
4	Old Poststroke	Up to 1 month	20	32,3
		1-3 months	26	41,9
		>3 months	16	25,8
Total			62	100

Based on the table above, the majority of respondents are in the age group of 46-59 years and 60 years with the same proportion (40.3%), indicating that the majority of post-stroke patients at Semen Padang Hospital are in the middle to elderly age group, according to the epidemiological characteristics of stroke that increase with age. By gender, male respondents (54.8%) were more numerous than women, in line with national data that shows the prevalence of stroke in men tends to be higher. In terms of education, most of the respondents had secondary education (45.2%), while in terms of post-stroke duration, the majority of respondents were in the range of 1-3 months post-attack (41.9%), which is a critical period in the process of functional rehabilitation of patients.

2. Variable Frequency Distribution

Univariate analysis was conducted to describe the frequency distribution of each study variable, namely interprofessional collaboration between nurses and occupational therapists and the level of functional independence of post-stroke patients.

Table 2. Variable Frequency Distribution (n=62)

No	Variable	Categories	Frequency (n)	Percentage (%)
1	Collaboration of nurses and occupational	Good	38	61,3

No	Variable	Categories	Frequency (n)	Percentage (%)
	therapists			
		Less Good	24	38,7
2	Level Of Functional Independence	Mandiri	40	64,5
		Dependency	22	35,5
	Total		62	100

The results of the univariate analysis showed that most respondents (61.3%) considered the collaboration between nurses and occupational therapists during the treatment period to be in the good category, while the rest (38.7%) considered that the collaboration was still not good. In the variable level of functional independence, the majority of respondents (64.5%) are in the independent category, while 35.5% of respondents still experience dependence in carrying out daily activities. This picture indicates that the majority of post-stroke patients at Semen Padang Hospital have received good interprofessional collaboration, in line with the level of functional independence that is also relatively good in the majority of respondents.

3. Relationship Between Collaboration of Nurses and Occupational Therapists with the Level of Functional Independence of Post-Stroke Patients

Bivariate analysis was conducted using Chi-Square test to determine whether there is a relationship between the collaboration of nurses and occupational therapists with the level of functional independence of post-stroke patients.

Table 3. Relationship Between Collaboration of Nurses and Occupational Therapists with the Level of Functional Independence of Post-Stroke Patients

Nurse & Occupational Therapist Collaboration	Independence n (%)	Dependence n (%)	OR (95% CI)	p-value	Cramer's V
Good	32 (84,2)	6 (15,8)	10,67 (3,18–35,81)	0,001	0,50
Less Good	8 (33,3)	16 (66,7)			
Total					

The results of The Chi-Square test showed a meaningful relationship between nurse-occupational therapist collaboration and the level of functional independence of post-stroke patients ($p = 0.001$). Patients who received good interprofessional collaboration had a 10.67 times greater chance of achieving functional independence than patients with poor collaboration (OR = 10.67; 95% CI: 3.18–35.81). The value of Cramer's V = 0.50 indicates a large effect size, so the relationship found is not only statistically significant but also has strong practical significance.



DISCUSSION

1. Variable Frequency Distribution

Based on Table 2, the majority of respondents, namely 61.3%, stated that the cooperation between nurses and occupational therapists was good, while the remaining 38.7% considered that the collaboration had not run optimally. These findings indicate that the majority of post-stroke patients treated at Semen Padang Hospital feel that there is sufficient synergy between the two professions throughout the treatment period. However, quite a number of respondents also feel that the cooperation is still not going as it should, so this aspect still deserves to be highlighted for hospital management. This Data is a platform to further explore the various elements that help shape the quality of collaboration between professionals in the field.

A similar pattern is also found in previous studies that show that interprofessional collaboration in health care facilities is generally considered to be in the good category. Fatimah's research (2022) reports that health workers' perceptions of collaboration between nurses and doctors are mostly in the good category, which reflects effective communication, mutual respect, and good coordination in providing services to patients. Corresponding results were also reported by Reese et al. (2021), which found that interprofessional collaboration between nurses and doctors in health care facilities was rated as positive overall, although there are still some aspects that need improvement, such as mutual appreciation and interprofessional communication. In addition, a systematic review by Bloom et al. (2022) affirms that effective interprofessional collaboration between health workers is an important component in improving service coordination and supporting the achievement of better patient outcomes.

The similarity of the results of this study with previous studies shows that a positive perception of interprofessional collaboration is not only found in Semen Padang hospital, but also in various other health care facilities. This indicates that the culture of cross-professional cooperation is growing through effective communication, clear distribution of roles, and collaborative decision-making in providing services to patients. The consistency of these findings further reinforces the validity of the results of the study that good collaboration between nurses and occupational therapists is one of the important factors in supporting quality and patient-centered rehabilitation services.

In terms of theory, the large proportion of collaboration with good categories can be understood through the framework of interprofessional collaboration that focuses on smooth communication, clarity of role distribution, and orientation to common goals in caring for patients. A systematic review of the care of patients with complex health conditions shows that close coordination between health professionals plays a major role in boosting service quality as well as patient satisfaction. The concept is quite appropriate when associated with the condition of post-stroke patients who require cross-disciplinary treatment on an ongoing basis, including the realm of Nursing and functional rehabilitation. The presentation of this theory helps to affirm that the quality of good collaboration does not arise out of nowhere, but is the fruit of a well-organized work system between health professionals.

Researchers suspect that the high number of collaboration in both categories in this study may be related to teamwork patterns that have been formed at Semen Padang Hospital, where nurses and occupational therapists commonly discuss together in preparing therapy schedules and evaluating patient progress. In addition, the characteristics of private hospitals that generally have neater work procedures are also expected to support the formation of a more targeted collaboration pattern. The researchers also estimated that the factor of flight hours or work experience of health workers helped shape a more mature way of communication between professions. Of course, this assumption still requires a deeper search through a qualitative approach to fully understand the mechanism of collaboration that takes place in the field.

Beyond the work culture factor, the element of professionalism is also classified as an important determinant for the quality of collaboration between professionals in hospitals. A study involving 242 nurses related to their satisfaction in the practice of interprofessional collaboration (IPCP) found that professional factors exert the most dominant influence over organizational factors and interpersonal interaction factors. This result shows that mastering the competence of each profession is the main capital for the realization of effective collaboration between nurses and other health workers, including occupational therapists. Therefore, efforts to strengthen professional competence should continue to be encouraged in order to maintain the quality of collaboration that has been classified as good (Yuliana. dkk2022)

Communication that runs smoothly is also a determining element for the success of interprofessional collaboration in health services. The literature review on the application of interprofessional collaboration in Indonesian hospitals states that open and orderly communication between health professionals contributes a large share to the smooth process of cooperation as well as the achievement of patient care goals. Without adequate communication, the chances of misunderstandings between nurses and occupational therapists in setting rehabilitation goals for post-stroke patients may increase. Therefore, efforts to strengthen communication between professionals should continue to be the main agenda in order to boost the quality of collaboration in the hospital environment (Ita. et al, 2021).

Meanwhile, the number of 38.7% of respondents who considered that collaboration was still not good deserves special attention, because this condition has the potential to affect the smooth process of patient rehabilitation. Research related to elements that affect the role of collaboration between nurses and doctors in hospitals found that rigid hierarchical structures and limited time to coordinate are the main causes of low quality collaboration among some health workers. This kind of obstacle is not impossible to be experienced in the collaboration of nurses and occupational therapists if it is not supported by a clear and regularly scheduled coordination mechanism. This finding confirms that the quality of interprofessional collaboration cannot be beaten evenly across all service units, so periodic reviews are still needed (Setiawan & Rizany, 2022).

The researchers suspect that the group of respondents who considered poor collaboration may be patients who undergo treatment on time frames or shifts with a fairly dense workload of



health workers, so that coordination opportunities between nurses and occupational therapists are limited. Another possibility is that differences in educational background and clinical flight hours between officers also affect their communication styles, both to patients and fellow professionals. The researchers also estimated that the way patients rated collaboration could be influenced by the extent to which they understood the role of each profession that dealt with them. This implies the importance of providing patients with an understanding of the role of the health team so that their assessment of collaboration becomes more objective.

Turning to the variable level of functional independence, the results of univariate analysis showed that 64.5% of respondents were classified as independent, while the remaining 35.5% were still dependent on the help of others in carrying out daily activities. This finding indicates that the majority of post-stroke patients at Semen Padang Hospital had reached a sufficient level of functional independence at the time of the study. Nevertheless, quite a number of patients still need help in performing basic daily activities. This picture is an important foundation to further explore the elements that contribute to the achievement and constraints of functional independence of post-stroke patients.

These results are in line with research on the relationship between the role of family caregiver and the level of self-care independence of post-stroke patients, which also found that the majority of patients who received regular rehabilitation assistance tended to achieve a good level of independence. The similarity of the pattern of these findings reinforces the view that post-stroke functional independence recovery is strongly influenced by the quality of assistance and rehabilitation interventions received by patients on an ongoing basis. Thus, the achievement of independence depends not only on the patient's clinical condition, but also on a well-structured rehabilitation process. This finding is quite relevant to the situation of patients at Semen Padang Hospital who obtained integrated nursing and occupational therapy interventions (Ismail, 2025).

Theoretically, the achievement of functional independence in post-stroke patients can be explained by the idea of neurological recovery that takes place gradually after a stroke, where the patient's functional capacity also improves as the nervous system recovers in the subacute to chronic phase. Assessment of the degree of dependence of daily activities through the Barthel index shows that the level of independence of patients is influenced by the severity of neurological deficits and the type of stroke experienced. Understanding this concept is important to explain why the majority of patients in this study, who were in the range of 1-3 months post-stroke, have shown relatively good achievement of independence. This description further confirms the relevance of functional recovery theory in explaining the results obtained in this study (Nurhidayat, 2021).

Beyond the neurological aspect, support from the family is also classified as an important determining element for the achievement of functional independence in post-stroke patients. Research on the relationship of family support with the level of independence of post-stroke patients found that patients who regularly receive family support tend to have a better level of ADL independence than patients who lack support. The support in question includes emotional

support, instrumental assistance, to family accompaniment when the patient undergoes regular rehabilitation sessions. This finding confirms that the success of restoring patient independence does not solely depend on the intervention of health workers, but also on the active involvement of the family throughout the rehabilitation process (Rahmawati, 2023).

The patient's discipline in following the rehabilitation schedule regularly contributes to the achievement of optimal functional independence. The study of post-stroke patient control compliance in terms of demographic factors found that patients who orderly followed the control schedule and rehabilitation therapy sessions tended to show more significant functional improvement than patients who were less obedient. This indicates that the combination of professional intervention and patient compliance is the main key to successful post-stroke rehabilitation. The compliance in turn is also influenced by the quality of communication and education provided by nurses and occupational therapists to patients and their families (Andriani. dkk2022)

The figure of 35.5% of respondents who still depend on the help of others needs to be examined more carefully, considering that this condition can be influenced by various factors outside of rehabilitation intervention alone. Research on elements that affect the quality of life of post-stroke patients found that the severity of stroke, the presence of comorbidities, and psychological conditions such as depression contributed to the low functional independence of patients. Unstable psychological conditions can reduce the patient's enthusiasm to actively participate in occupational therapy sessions and mobilization exercises directed by nurses. Therefore, the psychological aspects of the patient should also be considered in designing a more comprehensive rehabilitation program.

2. Relationship Between Collaboration of Nurses and occupational Therapists with The Level of Functional Independence of Post-Stroke Patients

The results showed that there was a significant relationship between the collaboration of nurses and occupational therapists with the level of functional independence of post-stroke patients in Semen Padang hospital ($p = 0.001$). Patients who obtained good interprofessional collaboration achieved more functional independence (84.2%) than patients who obtained poor collaboration, most of whom still experienced dependence in daily activities (66.7%). These findings suggest that the quality of collaboration between nurses and occupational therapists plays an important role in supporting the improvement of patients' functional abilities during the rehabilitation process.

The results of this study are in line with Fatimah's research (2022) which shows that good interprofessional collaboration between health workers is related to improving service quality and patient outcomes. These findings are also supported by a systematic review of Bloom et al. (2022), which concluded that effective interprofessional collaboration can improve service coordination, accelerate the achievement of rehabilitation goals, and provide better clinical outcomes for patients. In addition, the research of Reese et al. (2021) reported that effective communication,



mutual respect for the role of the profession, and joint decision-making are the main components that support the success of interprofessional collaboration in clinical practice.

Theoretically, the findings of this study are in accordance with the Interprofessional Collaborative Practice (ICP) developed by the World Health Organization. The theory explains that effective collaboration among health workers is built through open communication, role clarity, mutual respect, and shared responsibility in providing patient-centered services. In the rehabilitation of post-stroke patients, nurses play a role in clinical condition monitoring, education, and patient assistance, while occupational therapists focus on improving the ability to perform daily activities. The synergy of the two professions allows the preparation of more coordinated interventions, improves continuity of Service, accelerates the recovery of functions, and ultimately increases the level of functional independence of patients.

Additional support for these findings comes from a study that traced patient experiences to the practice of interprofessional collaboration in primary health care, which found that patients who felt good coordination between health workers tended to report a smoother recovery process and higher satisfaction with their care. The study also underlines that patient perceptions of the quality of health worker collaboration can be used as an indirect marker for the effectiveness of the entire treatment process. The suitability of these findings with ongoing research is quite obvious, considering that the assessment of collaboration here is also sourced from the patient's point of view during the treatment period. Therefore, the patient's subjective assessment of the collaboration of health workers deserves to be used as one of the practical benchmarks for monitoring the quality of rehabilitation services in hospitals (Morgan. et al, 2020).

When examined from a theoretical point of view, the relationship between interprofessional collaboration and functional independence of patients can be explained through the idea of collaborative competence in the health system, which highlights that the success of interprofessional cooperation is highly dependent on the ability to communicate, understand each other's roles, and the same orientation towards the goal of Patient Recovery. A systematic review of interprofessional collaboration competencies in health systems confirms that health teams that have qualified collaborative competencies tend to produce more targeted and sustainable interventions for patients. This kind of principle is quite relevant to the context of this study, considering that nurses and occupational therapists who collaborate effectively are able to draw up rehabilitation plans that support each other, not walk alone without connectedness. This theoretical framework helps explain why the quality of interprofessional collaboration can be an important determinant for the achievement of functional independence of post-stroke patients (Morgan. et al, 2020).

According to the researchers, the link between the two variables in this study appears because the collaboration that goes well between nurses and occupational therapists allows the preparation of schedules and rehabilitation goals that are more targeted and not stacked. When both professions routinely exchange information about the development of the patient's condition, the interventions provided tend to be more precise and sustainable every day. The researchers also

estimated that patients who felt good collaboration tended to feel more accompanied on a consistent basis, so their urge to practice independently was also triggered. Conversely, in poor collaboration, the possibility of overlapping interventions appears or is missed altogether, which in turn hinders the rate of recovery of the patient's independence.

Other mechanisms that help strengthen the link between these two variables can be traced in terms of work design and workload of health workers that affect the quality of the implementation of interprofessional collaboration in hospitals. Research on the relationship of work design, interprofessional collaboration, and workload to the implementation of Patient Safety found that health workers with a more controlled workload tend to be able to run interprofessional collaboration more optimally. This kind of condition ultimately has an impact on the quality of care received by patients, not least in the aspect of functional recovery. Thus, better management of the workload of health workers also becomes an important support for the successful collaboration of nurses and occupational therapists in supporting post-stroke patient independence (Shabir & Ahmad, 2022).

The high achievement of independence in both collaborating groups (84.2%) is also in line with the results of a study on the implementation of interprofessional collaboration in hospitals, which shows that well-organized IPC practices can accelerate the recovery process of patients through more efficient coordination of interventions between health professionals. Neat coordination allows nurses and occupational therapists to complement each other's tasks, for example, nurses ensure the patient's physical condition is ready before the occupational therapy session begins, so that functional training can run optimally. The efficiency of this kind of teamwork also has a direct impact on accelerating the recovery of patient independence in carrying out daily activities. These findings confirm the view that coordinated collaboration is not just a formality, but a substantive element for successful post-stroke rehabilitation. (Manurung. et al, 2023).

The researchers suspect that patients in the good collaboration group who managed to achieve high independence may also be supported by the regularity of an uninterrupted therapy schedule, so that the recovery process takes place continuously without significant breaks. In addition, smooth communication between nurses and occupational therapists makes it easier to adjust the exercise program more quickly according to the development of the patient's condition every day. The researchers also estimated that patients in this group tended to be more thoroughly educated about the importance of independent practice outside of formal therapy sessions. The combination of these factors is thought to strengthen the achievement of functional independence in groups with good category collaboration.

In the poorly collaborating group, the high proportion of dependent patients (66.7%) can be examined through a study on the relationship of health workers' attitudes to interprofessional collaboration practices, which found that less supportive attitudes towards interprofessional cooperation were closely related to the low quality of collaborative practices in the field. This lack of support can manifest in the form of a lack of initiative to coordinate, unwillingness to share



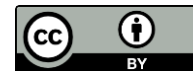
patient Development Information, and low involvement in cross-professional discussions. When this kind of attitude occurs between nurses and occupational therapists, the interventions that patients receive have the potential to run fragmented and less than optimal. This condition ultimately also explains why patients in poor collaboration groups experience more obstacles in achieving functional independence.

Similar findings were also reported in an analysis of the implementation of interprofessional collaboration in a private hospital, which revealed that weak coordination between health professionals contributed to the lengthening of the recovery period of patients as well as the low effectiveness of rehabilitation programs carried out. The study highlights that the absence of regular communication forums between professionals is one of the root problems of weak Collaboration in the field. Such a pattern is relevant to conditions in the poorly collaborative group in the study, which likely encountered similar barriers related to routine communication and coordination between nurses and occupational therapists. Therefore, strengthening the scheduled communication forum between health professionals can be one of the concrete solutions to overcome this problem at Semen Padang Hospital.

Viewed from the perspective of coordinated care theory, patients with complex health needs such as post-stroke require cross-professional treatment that is interconnected so that intervention gaps do not appear that can slow functional recovery. A systematic review of interprofessional collaboration in patients with complex needs confirms that broken coordination between professionals risks duplication or service gaps that ultimately harm patients. The principle of this theory is directly related to the bivariate results of this study, which showed that weak Collaboration correlated with high rates of patient dependence. Thus, this theory of Coordinated Care provides a solid conceptual foundation for explaining the mechanisms behind the statistical relationships found (McMurray. et al, 2021).

The researchers observed that there were a small number of patients in the good collaboration group who remained dependent (15.8%), while there were also patients in the poor collaboration group who managed to achieve independence (33.3%). Researchers suspect this variation is influenced by other factors outside the interprofessional collaboration itself, such as the severity of neurological deficits, the presence or absence of comorbidities, and the psychological condition of patients during rehabilitation. Alternatively, patients in the less well-collaborative group who remain self-reliant may have strong personal motivations or receive additional support from family members who help with recovery. This kind of variation in results indicates that while interprofessional collaboration plays an important role, it is not the sole determinant of post-stroke patient functional independence.

This first conjecture about other factors outside of collaboration is supported by research on the elements that affect the quality of life of post-stroke patients, which found that the severity of stroke, the presence of comorbidities, and psychological conditions such as depression are also important determinants of functional achievement of patients, regardless of the quality of services they receive. Patients with severe stroke severity, for example, tend to require a longer recovery



time even get the collaboration of optimal health workers. This could explain why a small percentage of patients in the good collaboration group remained functionally dependent. Therefore, the assessment of clinical severity of patients should also be considered in interpreting the results of the relationship between collaboration and functional independence (Abdu. et al, 2022).

Meanwhile, the success of some patients in the collaboration group is not good in achieving independence can be explained by the role of family support as a balancing factor. Research on the role of family caregivers on the self-care independence of post-stroke patients shows that strong family support is able to cover the shortcomings in the formal service side, including when the collaboration of health workers has not been running optimally. Families who actively accompany independent exercise at home can be a partial replacement for the role of health workers in promoting the patient's functional recovery. Thus, family involvement remains an important variable that needs to be taken into account with interprofessional collaboration in formulating a comprehensive post-stroke rehabilitation strategy.

Overall, the results of this bivariate analysis reinforce the conclusion that interprofessional collaboration between nurses and occupational therapists is closely related to the level of functional independence of post-stroke patients, although it is not the only determining factor. The researchers assume that these findings provide an important signal for hospital management to not only focus on the technical competence of each profession, but also on strengthening the coordination and communication systems between professions on an ongoing basis. Researchers also suspect that strengthening routine communication forums, clarity of role distribution, and active family involvement can be complementary strategies to maximize the achievement of functional independence of patients. Thus, the results of this study are expected to be the basis for evaluating operational policies in order to strengthen interprofessional collaboration as a whole at Semen Padang Hospital.

CONCLUSIONS

This study concluded that there is a significant relationship between the collaboration of nurses and occupational therapists with the level of functional independence of post-stroke patients in Semen Padang hospital ($p = 0.001$). Patients who obtained good interprofessional collaboration tended to have a higher level of functional independence than patients who obtained poor collaboration. These findings suggest that effective collaboration between nurses and occupational therapists is an important factor in supporting successful rehabilitation of post-stroke patients. Therefore, strengthening the practice of interprofessional collaboration through effective communication, coordination of services, and clarity of interprofessional roles needs to be continuously improved in an effort to optimize the functional independence and rehabilitation outcomes of post-stroke patients.

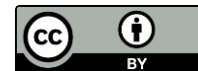
This study has some limitations that need to be considered in interpreting the results. In addition, the study was conducted at one location with a relatively limited number of respondents,



so the results of the study have limitations in terms of generalization to a wider population. Further research is recommended with a larger sample coverage and involving various health care facilities in order to obtain stronger evidence on the effect of interprofessional collaboration on increasing the independence of post-stroke patients.

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