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IMPACT OF STRUCTURED TRAINING PROGRAM ON KNOWLEDGE AND PRACTICES AMONG CAREGIVERS DEALING WITH LONG TERM NASOGASTRIC TUBE PATIENTS

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Abstract

Background: The rise in long-term nasogastric tube (NGT) use, driven by conditions like dysphagia and neurological disorders, underscores the need for effective caregiver support. Caregivers face multifaceted responsibilities, including technical proficiency, complication management, and psychosocial support. Standardized and comprehensive caregiver education is crucial to ensure high-quality care for individuals dependent on NGTs for extended periods. Therefore, the study aimed to determine the impact of structured training program on level of knowledge and practices among caregiver dealing with long term nasogastric tube patients.

Methodology: A quasi-experimental study design was conducted among 36 caregivers during the months from April 2023 to November 2023 at Punjab Institute of Neuro Sciences, Lahore General Hospital Lahore. Purposive sampling was used to collect the data who met specific criteria. Various tools, including knowledge questionnaire and checklists, were employed to collect data from caregivers, covering demographics, knowledge, and practices. Data was analyzed using SPSS version 25.

Results: The results of study revealed that majority of participants 24(66.7%) were female and majority16 (44.4%) were aged between 31 to 40 years. Gender of caregivers has no association with mother language and education level. The study revealed that Pre-intervention, males scored significantly higher (45.42±17.90) than females (33.13±9.53) with p-value 0.032. While in post-intervention, no significant difference was observed between males (89.58±10.97) and females (83.96±19.05) with p-value 0.562. Pre-intervention practices showed non-significant gender differences (male: 43.06±22.42, female: 36.46±15.51, p=0.518). Similarly, post-intervention practices remained non-significant between males (83.33±12.31) and females (84.03±11.24, p=0.728).

Conclusion: In conclusion, the study demonstrates a significant improvement in caregivers' knowledge and practices regarding nasogastric tube care after the educational intervention. The findings highlight the effectiveness of the intervention in enhancing caregivers' awareness of critical aspects related to nasogastric tube management and enteral feeding procedures.

Keywords: Structured Training Program; Caregivers; Caregivers' Knowledge; caregivers' Practices; Long Term Nasogastric Tube

1. INTRODUCTION

The increasing prevalence of medical conditions requiring long-term nasogastric tube (NGT) support has become a significant aspect of modern healthcare (Manikandan, 2020). Conditions such as dysphagia, neurological disorders, and critical illnesses often necessitate the prolonged use of NGTs, resulting in a growing population of individuals who depend on these devices for nutritional support (Hsiao et al., 2022). The management of long-term NGT patients, however, extends beyond the medical procedure of tube insertion; it involves a complex interplay of technical expertise, nutritional understanding, and the ability to anticipate and manage potential complications (Jaafar et al., 2019). Neurological conditions, including multiple sclerosis, cerebrovascular accidents, and head and neck cancer, stand out as the most prevalent indications for nasogastric tube feeding in the majority of countries across the globe (Gimenes et al., 2019).

Highlighting the extended use of nasogastric tubes (NGTs) in present-day healthcare, especially among a growing population relying on these devices for nutritional support, underscores a persistent need for ongoing assistance (Pereira et al., 2020). This underlines the critical role that NGTs play in addressing prolonged nutritional requirements and contributing to the overall well-being of individuals facing specific health conditions(Schroeder & Sitzer, 2019).

Estimates indicate a considerable prevalence of long-term nasogastric (NG) tube users in the United States, with 463 individuals per million annually (Hsu et al., 2022). A research underscores the substantial need for NG tube feeding, revealing that 58% of home care patients and 65.66% of residents in long-term care facilities depend on this method (Li et al., 2022). Notably, Taiwan stands out with a significantly higher utilization rate of NG tubes at 5.8%, and 47% of home care services in the country involve NG care (Hsiao et al., 2022). Recent data, as presented by (Alshaikh et al., 2022)

Providing care for long-term nasogastric tube (NGT) patients is a complex task that goes beyond the basic act of tube insertion. Beyond the technical aspects of tube management, caregivers need to develop a comprehensive skill set (Motta et al., 2021). Caregivers must ensure the proper placement of the tube, address dislodgment issues, and adeptly manage any complications that may arise during the course of long-term NGT use (Pereira et al., 2020).

Anticipating and managing potential complications is a critical aspect of long-term NGT care. (Wanden-Berghe et al., 2019). Clear communication is essential for understanding changes in the patient's condition, adjusting care plans, and addressing any concerns that may arise (Judd, 2020).Considering the psychosocial aspects of care is equally important. (Czuber-Dochan et al., 2020). This understanding is fundamental to providing tailored nutritional support throughout the duration of NGT usage (Tsugihashi et al., 2021).

The nurse-to-patient ratio is low in Pakistan, and there aren't enough nurses to follow patients who are still alive at home. In the end, family members or careers are responsible for managing the care burden. Patients face more risks when unskilled family members are trusted with their care when they are severely ill. This caregiver's lack of training, absence of ongoing supervision and evaluation, and absence of established protocols for nasogastric tube medicine administration may all contribute to their lack of expertise (Manikandan, 2020). Therefore, a coordinated program is required in Pakistan to encourage training and counselling for those who care for NG tube patients. Increased readmission rate due to prolonged NGT use. Before discharge, careers ought to receive sufficient education to prevent long-term NG tube issues (Ho et al. 2018).

1.1 Objectives

1. To determine the impact of structured training program on level of knowledge among caregivers dealing with long term nasogastric tube patients.
2. To determine the impact of structured training program on level of practices among caregiver dealing with long term nasogastric tube patients.

2. METHODOLOGY

A quasi-experimental design pre and post one group was used to conduct the study. This study was conducted at of Punjab Institute of Neuro Sciences, Lahore General Hospital Lahore. Purposive sampling technique was used to collect data from family caregivers of long term Nasogastric tube patients in Punjab Institute of Neurosciences LGH Lahore.

The study was completed in 09 months from April 2023 to December 2023 after the approval of synopsis from Research Ethical committee (REC). A sample size of 36 was calculated usin20% drop out. Caregivers whose patients having NG tubes with neurological disease, involves in-patient care for 6-8 hours per day, and adult who can speak Urdu, English, Punjabi and Saraiki were included in the study. Caregivers whose patients having history of prior diagnosed Aspiration pneumonia, Family caregiver who are incapable of providing consent**,** Relatives who are not involve in caring the NG tube patient, those who have already received any educational training on this topic were excluded from the study. The demographic questionnaire, Caregiver' Knowledge Questionnaire, and Caregiver' Practice Questionnaire were used to collect data. Data was collected at two points, pre and post educational intervention. In pre-intervention phase, caregiver were selected in the study following the inclusion and exclusion criteria of the study. The aims and objectives of the study were shared with participants. Consents was taken from all the study participants. Total 36 caregivers were selected. Pre-interventional data was collected by researcher. Pre-education data of patients was recorded from patient's charts. Before educational intervention, participants were assessed for practices and knowledge. After completion of pre-intervention phase, 12 weeks of educational intervention was given to participants. Total 36 caregivers were selected. The participants were divided into four groups; each group have nine participants. I selected 03 caregiver from ICU and HDU on each day. Intervention was given 03 days in a week, Monday Tuesday and Wednesday in morning time and rest of the missing participants were given intervention on Thursday and Friday in auditorium of selected research setting. Participants were reminded for not to attend any additional educational session regarding NG tube to avoid the interference of confounding factors. Educational intervention was prepared for participants from ESPN practical home guidelines on NG tube care and validated by the expert of relevant field. Educational intervention consist of total four sessions in a 12 week. The booklet's introduction and practical application would help caregiver integrate their past knowledge about NGT feeding learned from presentation. After 12 weeks of intervention, giving a four weeks gap, the participants of the study were assessed for post- knowledge and practices by using same validated questionnaire. Statistical package for social sciences (SPSS) version 25 was used to analyze data.

3. RESULTS

3.1 Demographic Characteristics

This section shows the demographic characteristics of participants.

Table 1: Age of participants

Age	Frequency	Percent
20-30 Years	11	30.6
31-40 Years	16	44.4
More than 40 Years	9	25.0
Total	36	100.0

Table 1 shows that majority of participants 16(44.4%) were ages between 31 to 40 years, 11(30.6%) were 20 to 30 year, and 9(25%) were more than 40 years.

Table 2: Gender of participants

Gender	Frequency	Percent
Male	12	33.3
Female	24	66.7
Total	36	100.0

Table 2 shows that among the participants, 12(33.3%) were male and 24(66.7%) were female.

Table 3: Gender wise comparison of Mother Language

Gender		Mother language			Total
		Urdu	Punjabi	Saraiki	
Male	Count	0	11	1	12
	% within Gender	0.0%	91.7%	8.3%	100.0%
Female	Count	3	19	2	24
	% within Gender	12.5%	79.2%	8.3%	100.0%
Total	Count	3	30	3	36
	% within Gender	8.3%	83.3%	8.3%	100.0%

Likelihood Ratio 2.580

Table 3 shows that there was no association between gender and mother language (p-value 0.275)

Table 4: Gender wise comparison of occupation

Gender		Occupation				Total
		Professional	Skilled Worker	Laborer	Not Working	
Male	Count	4	3	2	3	12
	% within Gender	33.3%	25.0%	16.7%	25.0%	100.0%
Female	Count	1	3	0	20	24
	% within Gender	4.2%	12.5%	0.0%	83.3%	100.0%
Total	Count	5	6	2	23	36
	% within Gender	13.9%	16.7%	5.6%	63.9%	100.0%

Likelihood Ratio 14.695

Table 4 shows that there was an association between Gender and occupation (p-value 0.002).

Table 5: Gender wise comparison of Education level

Gender		Education level				Total
		Primary	Matric	Intermediate	Graduate	
Male	Count	1	5	1	5	12
	% within Gender	8.3%	41.7%	8.3%	41.7%	100.0%
Female	Count	4	4	7	9	24
	% within Gender	16.7%	16.7%	29.2%	37.5%	100.0%
Total	Count	5	9	8	14	36
	% within Gender	13.9%	25.0%	22.2%	38.9%	100.0%

Likelihood Ratio 4.182

Table 5 shows that there was no association between gender and education level (p-value 0.242).

Test for Normality

Table 6: Test for normality of data

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Pre Knowledge	.202	36	.001	.898	36	.003
Post Knowledge	.286	36	.000	.755	36	.000
Practice Pre	.184	36	.003	.852	36	.000
Practice Post	.345	36	.000	.757	36	.000
a. Lilliefors Significance Correction						

Table 6 shows that, the data is not normally distributed therefore non parametric test were applied to determine the statistically significant mean difference.

Mean Knowledge Score Difference of Caregivers before and after Intervention

Table 7: Mean knowledge score difference among pre and post interventional groups

Categories	Male	Female	p-value
Knowledge Pre	45.42±17.90	33.13±9.53	0.032
Knowledge Post	89.58±10.97	83.96±19.05	0.562

Mann-Whitney U

Table 7 shows that Pre Intervention Knowledge percentage score of male was 45.42±17.90 and female was 33.13±9.53. Mean difference was statistically significant (p-value 0.032). While Post Intervention Knowledge percentage score of male was 89.58±10.97 and female was 83.96±19.05. Mean difference was not statistically significant (p-value 0.562)

Mean Practices Score Difference of Caregivers before and after Intervention

Table 8: Mean practices score difference among pre and post interventional groups

Categories	Male	Female	p-value
Practices Pre	43.06±22.42	36.46±15.51	0.518
Practices Post	83.33±12.31	84.03±11.24	0.728

Mann-Whitney U

Table 8 shows that Pre Intervention Practices percentage score of male was 43.06±22.42 and female was 36.46±15.51. Mean difference was not statistically significant (p-value 0.518). Post Intervention Practices percentage score of male was 83.33±12.31 and female was 84.03±11.24. Mean difference was not statistically significant (p-value 0.728).

4. DISCUSSION

Emphasizing the crucial role of nasogastric tube insertion in supplying essential nutrients for bodily growth, maintaining gastrointestinal function, preventing malnutrition, and avoiding dehydration, it is imperative for caregivers to consistently monitor and provide meticulous routine care. Failing to do so may lead to severe consequences, encompassing aspiration pneumonia, infections, gastrointestinal issues, and mechanical or metabolic complications (Youssef Saleh GaddAllah et al., 2022). Hence, the current research contributes fresh evidence regarding the impact of a structured training program on the knowledge and practices of family caregivers of long-term NGT-fed patients within the cultural context of Pakistan. The study's findings underscore the enhancement of caregivers' knowledge and practices following the intervention, emphasizing the crucial need for advancements in this domain.

The results of the present study revealed that 44% of studied participants' age was 31 to 40 years. From the researcher's point of view these results may be due to the studied individuals who were caring patients often find themselves in a life stage where they may have acquired caregiving responsibilities, either for children or elderly family members. This age group is commonly associated with the peak of family-building and parenting, making them more likely to take on caregiving roles. The findings align with (Xue et al., 2022) research, titled " The experience of family caregivers of patients receiving home nasogastric tube feeding in China" where it was reported that forty four percent of the nurses involved in the study were under the age of 40. Similarly, these findings are consistent with the outcomes of (Al-Qalah & Alrubaiee, 2020) indicating that nearly fifty percent of the participants in their study fell within the age range of 20 to 40 years. In contrast, these results diverge from those presented by (Alrubaiee, 2020) where the findings revealed that 48.9% caregivers were aged between 20 and 25 years.

Regarding gender, the present study indicated that the majority of nurses were women. From the researcher's perspective, the observed trend in these results could be attributed to the prevalence of extended families in Pakistan. In such family structures, women often take on caregiving responsibilities for their family members, especially those who need specialized medical attention. These findings are in harmony with the outcomes of (Chen et al., 2018) research wherein all participants in their study were female nurses. In contrast, these results diverge from the findings

reported by (Aziz & Ali, 2020) in their study which indicated that the majority of their study participants were male.

Regarding occupation, the recent study found that a significant portion of male participants were engaged in professional roles, whereas a majority of female caregivers were not employed. The researchers posit that societal expectations may influence these trends, with men facing pressure to pursue professional careers, thereby increasing their likelihood of employment. In contrast, societal norms may prioritize women's roles in caregiving within the family, potentially diminishing their likelihood of participating in the workforce. These findings are supported by (Jamshidi et al., 2020) who reported that majority of participants were women who lived at home and do not involve in any occupation.

In terms of educational background, the recent study uncovered that a majority of the participants had graduate level education. The researcher suggests that this outcome might be attributed to the fact that graduate-level education may pursue roles that offer career advancement and increased responsibilities, including the care of patients with specialized needs like those requiring nasogastric tube support. This finding aligns with (Huang et al., 2019) study, where approximately half of the participating had graduate-level degrees from technical institutes.

The study indicated a notable enhancement in the mean scores of the surveyed nurses' overall knowledge regarding nasogastric tube care following the implementation of guidelines compared to the period before the guidelines were introduced. This outcome is in line with the findings of (Mahdy et al., 2019) in their study they similarly reported a statistically significant difference and a general improvement in the mean knowledge scores of nurses in nasogastric tube care from the pre-intervention to post-intervention phases. This result is also agreed with (Bedier et al., 2016) whose study findings reported that implementation of educational program for caregivers' caring of patients undergoing nasogastric tube feeding significantly improved the caregivers' level of knowledge. Similarly, (El-Meanawi, 2017) also supported these findings as its study reported that educational intervention improved caregivers level of knowledge for caring patients depending upon NGT. This result is also reinforced by (Kim & Chang, 2019)in their research titled "Implementing an educational program to improve critical care nurses' enteral nutritional support." They noted that before the intervention guidelines, a majority of nurses exhibited an unsatisfactory knowledge level regarding nasogastric tubes. However, post-intervention, a significant improvement was observed in the knowledge level of nurses.

The present study also demonstrated a substantial and statistically significant enhancement in the mean scores of overall practice related to nasogastric tube care and its complications following the implementation of guidelines, as opposed to the period before guideline implementation. This result is corroborated by the findings of (Ahmed et al., 2018) in their research titled "Effect of Educational Nursing Guidelines Regarding Enteral Feeding on Nurses' Knowledge and Practices at Critical Care Units." The study by Ahmed and colleagues reported a highly significant statistical difference in mean scores for overall practice related to nasogastric tube care before and after the implementation of educational guidelines.

The research findings indicated that over half of the participants demonstrated an unsatisfactory level of practice scores concerning nasogastric tube care before the implementation of guidelines. However, following the guidelines' implementation, there was an enhancement in the overall practice scores of nurses. This improvement could be attributed to factors such as deficient skills, high workload, lack of concentration, and limited experience observed before the guidelines were introduced. Notably, after the implementation of guidelines, there was a positive shift in the overall practice scores of caregivers, reflecting the beneficial impact of nursing guidelines on their practices when caring for patients with nasogastric tubes. These results are in line with the observations made by (Chen et al., 2018), who observed that a significant number of caregivers exhibited unsatisfactory practice levels in nasogastric tube care before the intervention. Nevertheless, the majority of caregivers demonstrated a good level of practice after the guidelines were implemented.

5. CONCLUSION

In conclusion, the study evaluated the effectiveness of an educational intervention on caregivers' knowledge and practices regarding nasogastric tube care. The findings, as depicted highlight a significant improvement in both knowledge and practices post-intervention, with noteworthy enhancements in key aspects such as early initiation of tube feeding, hand hygiene, and proper flushing techniques. Despite these positive outcomes, certain areas, particularly patient positioning after feeding, require further clarification.

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