

**Pielęgniarstwo w opiece długoterminowej**  
**Kwartalnik międzynarodowy**

LONG-TERM CARE NURSING  
INTERNATIONAL QUARTERLY

ISSN 2450-8624

tom 5, rok 2020, numer 3, s. 207-218

e-ISSN 2544-2538

vol. 5, year 2020, issue 3, p. 207-218

DOI: 10.19251/pwod/2020.3(3)

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**PREPARING NURSES FOR TAKING CARE OF  
PATIENTS WITH PERCUTANEOUS ENDOSCOPIC  
GASTROSTOMY AND THEIR SENSE OF SELF-  
EFFICACY**

**Przygotowanie pielęgniarek do opieki nad pacjentem z przezskórną  
endoskopową gastrostomią a poczucie własnej skuteczności**

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## **Abstract (in Polish):**

### **Cel pracy**

Przełaskórna endoskopowa gastrostomia (PEG) umoŹliwia dostarczanie pacjentowi Źywnienia, w sytuacji gdy Źywnienie drogą naturalną nie jest moŹliwe. Właściwa pielęgnacja PEG pozwala nie tylko zapobiegać powikłaniom, ale moŹe również poprawić komfort i jakość Źycia pacjentów.

### **Cel:**

Analiza związku wiedzy pielęgniarek na temat opieki nad pacjentem z PEG i poczucia własnej skuteczności.

### **Materiał i metody**

Badaną grupę stanowiło 85 uczestniczek różnych form kształcenia podyplomowego przeznaczonych dla pielęgniarek w Małopolsce. W badaniu wykorzystano polską wersję Skali Uogólnionej Własnej Skuteczności (Generalized Self-Efficacy Scale – GSES) oraz autorski kwestionariusz ankiety składający się z dwóch części, pierwsza część dotyczyła podstawowych danych socjodemograficznych, druga część obejmowała pytania sprawdzające poziom wiedzy pielęgniarek na temat pielęgnacji pacjenta z przełaskórna endoskopową gastrostomią.

### **Wyniki**

Średni wynik testu dla ogółu respondentów wyniósł 17,9 punktów (SD=6,80), a wysoki i średni poziom wiedzy na temat opieki nad pacjentem z przełaskórna endoskopową gastrostomią w badanej grupie prezentowało 32,94% (n=28) ankietowanych. Nie stwierdzono istotnej statystycznie zależności pomiędzy poziomem wiedzy a poczuciem własnej skuteczności ( $p>0,05$ ).

### **Wnioski**

1. Poziom wiedzy badanych pielęgniarek na temat pielęgnacji pacjenta z PEG był niesatysfakcjonujący.
2. Rodzaj ukończonego przez pielęgniarki kształcenia zawodowego oraz miejsce pracy miały istotny wpływ na poziom wiedzy z zakresu opieki nad pacjentem z PEG.
3. Koniecznym jest ciągle podnoszenie kwalifikacji personelu pielęgniarskiego w zakresie opieki nad pacjentem z PEG.

## **Abstract (in English):**

### **Aim**

Percutaneous endoscopic gastrostomy provides a means of feeding patients when natural oral intake is impossible. Appropriate PEG care not only prevents complications but also improves patients' comfort and their quality of life.

### **Aim**

An analysis of the correlation between nurses' knowledge about care provided to PEG patients and their sense of self-efficacy.

### **Material and methods**

The study was conducted in a group of 85 nurses participating in various forms of postgraduate courses dedicated to nurses from Małopolska region. It was carried out with the application of Generalized Self-Efficacy Scale (GSES) and a specially designed questionnaire consisting of two parts, first of which was

focused on basic sociodemographic data, whereas the other one included questions checking the level of knowledge about taking care of patients with PEG.

### Results

The average score obtained by the respondents in the test checking their knowledge was 17.9 (SD=6.80), and the high or average level of knowledge about taking care of PEG patients was observed in the case of 32.94% of respondents (n=28). No statistically significant correlation was found between nurses' knowledge and their sense of self-efficacy ( $p>0.05$ ).

### Conclusions

1. The level of nurses' knowledge about taking care of patients with PEG is unsatisfactory.
2. The type of nurses' professional education and their workplace had a significant impact on their level of knowledge about taking care of patients with PEG.
3. It is necessary to constantly improve the qualifications of the nursing staff in the care of patients with PEG.

**Keywords (in Polish):** przezskórna endoskopowa gastrostomia, poczucie własnej skuteczności, pielęgniarstwo.

**Keywords (in English):** percutaneous endoscopic gastrostomy, sense of self-efficacy, nurse.

**Received:** 2020-07-23

**Revised:** 2020-08-06

**Accepted:** 2020-09-18

**Final review:** 2020-09-02

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### Introduction

The data provided by the Polish Society for Clinical Nutrition (Polskie Towarzystwo Żywienia Klinicznego) indicate that during hospital admission, 30% of patients already suffer from malnutrition. In the case of 70% of patients treated in institutions (hospitals, rehabilitation centres), their nutritional condition tends to deteriorate during hospitalization, and over 75% of cancer patients in terminal stage of the disease die with undernourishment symptoms [1]. In the context of aforementioned data, taking care of patients' proper nutrition poses a real challenge for medical staff. Nutrition via the gastrointestinal tract (enteral nutrition) is considered to be the most efficient and desirable. One of the alternatives of enteral nutrition is nutrition supply through an artificial opening in the abdominal wall directly into the gastrointestinal tract – percutaneous endoscopic gastrostomy (PEG), which makes it possible to provide patients with a high-quality diet specially adjusted to their clinical condition. The European Society for Paediatric

Gastroenterology Hepatology and Nutrition (ESPGHAN) recommends the application of gastrostomy for every patient who requires long-term enteral nutrition which would last longer than 4–6 weeks [2]. Gastrostomy might be applied in nutrition of people of all ages and clinical conditions. Its efficiency was proven in the nutrition of infants [3], adults and elderly people [4]. Performing PEG is recommended in the case of cancer and tumour patients (especially if the tumour is located in the area of their neck, head or esophagus) and patients diagnosed with malnutrition or neurological disorders in swallowing [5] (including amyotrophic lateral sclerosis) and even for patients in the later stages of dementia [6].

Numerous researches confirm that PEG is a simple and safe method of enteral nutrition for people who, for various reasons, cannot be fed orally [7; 8; 9]. However, this method of nutrition requires strict procedures so as to minimize the risk of possible complications such as feeding tube obstruction, fistula skin infection or peritoneal leakage of gastric contents [3; 10]. Therefore, it is essential for nurses to possess crucial competences in this area so that they could provide PEG patients with appropriate professional care.

The aim of the study was an analysis of the correlation between nurses' knowledge about proper care provided to PEG patients and their sense of self-efficacy.

### Material and methods

The study was conducted in a group of 85 participants of various forms of postgraduate courses dedicated to nurses from Małopolska region.

A Polish version of Generalized Self-Efficacy Scale – GSES designed by R. Schwarzer and M. Jerusalem and adapted by Z. Juczyński was used in the study. The scale consists of 10 questions and is designed to assess one's general self-belief in their effective ability to cope with a variety of demands and obstacles in life. Every question is scored on a 4-point scale where 1 means “not at all true”, 2 – “hardly true”, 3 – “moderately true” and 4 – “exactly true”. The sum of all the items is the general index of the sense of self-efficacy which ranges between 10 and 40. The higher the score, the higher self-efficacy. The scores are then presented as sten scores and interpreted in the following way: score between 1 and 4 means low self-efficacy, 5–6 indicates average and 7–10 high self-efficacy [11].

The other research tool was a questionnaire prepared by the authors. The questionnaire consisted of two parts, the first of which focused on sociodemographic data and the other included a test checking respondents' knowledge and questions allowing for a subjective assessment of one's knowledge, experience and qualifications for taking care of PEG patients. The knowledge test consisted of 27 questions either single-choice or multiple-choice ones. The respondents scored 1 point for each correct answer. Depending on the total score in the knowledge test, the respondents' level of knowledge was ranked as low, average or high.

Then the obtained scores were analysed statistically with the application of the STATISTICA 13 PL software. The results were presented by means of a mean score and standard deviation as well as median, minimum and maximum. Depending on the type and distribution of variables the following tests were used for calculations: Spearman's rank correlation coefficient, Mann-Whitney U test, Kruskal-Wallis H test and Kruskal-Wallis ANOVA rank test. For all the variables the level of statistical significance was set as  $\alpha=0.05$ .

During the analysis of the collected material, the workplaces were divided into 3 groups depending on the probability of taking care of a PEG patient:

1 = wards with a high probability of taking care of a PEG patient (palliative care ward/hospice, surgery, oncology),

2 = wards with a moderate probability of taking care of a PEG patient (pulmonology, cardiology, paediatrics, neurology, general medicine, geriatrics, health care centre, nursing home),

3 = wards with a low probability of taking care of a PEG patient (emergency department, intensive care unit, operating theatre, dialysis, rehabilitation, psychiatry, obstetrics and gynaecology).

The study was conducted following the recommendation of the Declaration of Helsinki. Every participant gave their informed consent for participation in the project and was informed that their participation in the study was voluntary and anonymous and assured that the findings were going to be used for scientific purposes only.

## Results

The study group consisted of 85 nurses and they were all women. The average age of respondents was  $40.21 \pm 9.77$ . The average time of employment was  $17.49 \pm 10.57$  years. The most numerous group of respondents was made up of nurses working on wards with low (45.88%; n=39) or moderate (37.65%; n=32) probability of taking care of a PEG patient and also of respondents with a Master's degree in nursing (47.06%; n=40) and those living in the country (47.6%; n=40), (Table 1).

**Table 1. Sociodemographic characteristic of the examined group**

**Tabela 1. Charakterystyka socjodemograficzna badanej grupy**

	M	SD
Wiek (w latach)	40,21	9,77
Staż pracy	17,49	10,57
	n	%
Płeć (K=kobiety)	85	100,00
Miejsce zamieszkania:		
wieś	40	47,06
miasto do 20 tys	11	12,94
miasto powyżej 20 tys	34	40,00
Tytuł zawodowy:		
pielęgniarka dyplomowana	18	21,17
licencjat pielęgniarstwa	24	28,24
magister pielęgniarstwa	40	47,06
inne	3	3,53
Formy kształcenia podyplomowego:		
szkolenie specjalizacyjne	19	22,35
kurs kwalifikacyjny	50	58,83
kurs specjalistyczny	68	80,00
kurs dokształcający	17	20,00
Miejsce pracy:		
Grupa 1	14	16,47
Grupa 2	32	37,65
Grupa 3	39	45,88

Legend: M – arithmetic mean, SD – standard deviation, n – liczba badanych, % - procent badanych, Grupa 1, Grupa 2, Grupa 3 – oddziały o prawdopodobieństwie opieki nad pacjentem, odpowiednio: wysokim, średnim, niskim

Source materials: Study based on the authors' own research.

The vast majority of respondents in their subjective assessment of knowledge about taking care of PEG patients ranked average (52.94%; n=45), for the others the level of their knowledge was high (21.17%; n=18), low (21.17%; n=18) or very low (4.7%; n=4). A slightly higher number of respondents assessed their professional qualifications for taking care of PEG patients as average (55.29%; n=47) and high (21.17%; n=18).

Almost half of the respondents confirmed that they were aware of complications connected with PEG nutrition. However, some nurses (36,47%; n=31) tended to forget about oral hygiene of PEG patients and could not calculate the time of tube feeding in minutes (68.24%; n=58). Moreover, only half of the respondents (49.41%; n=42) proved to be experienced in taking care of PEG patients.

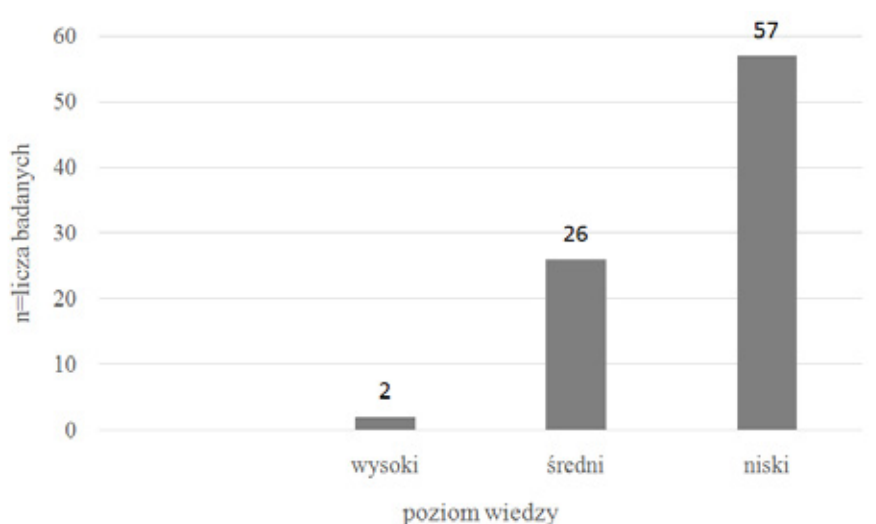
On the other hand, an analysis of the results of the test checking nurses' knowledge showed that the average score for all the respondents was 17.96 (SD=6.80), whereas high and average level of knowledge about taking care of PEG patients in the examined group could be observed in the case of 32.94% of respondents (n=28) (Table 2, Figure 1).

**Table 2. Total score for the level of knowledge and general index of self-efficacy according to GSES – descriptive statistics**

**Tabela 2. Ogólny wynik poziomu wiedzy oraz ogólny wskaźnik poczucia własnej skuteczności według skali GSES – statystyki opisowe**

	M	SD	Me	Min	Max
Ogólny wynik poziomu wiedzy	17,96	6,80	18,00	0,00	31,00
GSES	30,45	2,86	30,00	24,00	39,00

Legend: M – arithmetic mean, SD – standard deviation, Me – median, Min – minimum, Max – maximum  
 Source materials: Study based on the authors' own research.



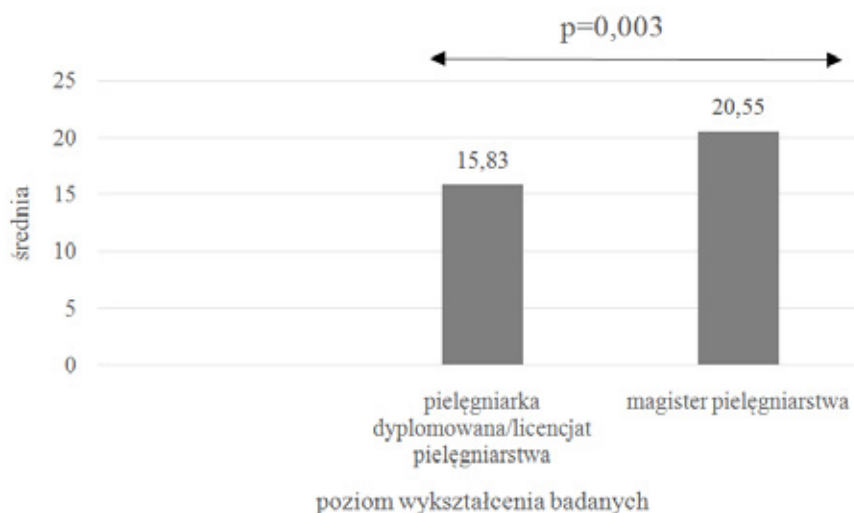
**Figure 1. Distribution of the level of knowledge**

**Rycina 1. Rozkład poziomu wiedzy**

Source materials: Study based on the authors' own research

No statistically significant correlation was observed between the actual level of the respondents' knowledge about taking care of patients with percutaneous endoscopic gastrostomy and their self-assessment of this knowledge ( $p > 0.05$ ). In turn, a statistically significant but weak correlation was observed between the level of knowledge and self-assessment of respondents' qualifications for providing care ( $p = 0.014$ ;  $Rho = 0.266$ ), self-assessment of caring experience ( $p = 0.026$ ;  $Rho = 0.241$ ), and the sense of being prepared for educating PEG patients ( $p = 0.028$ ;  $Rho = 0.239$ ).

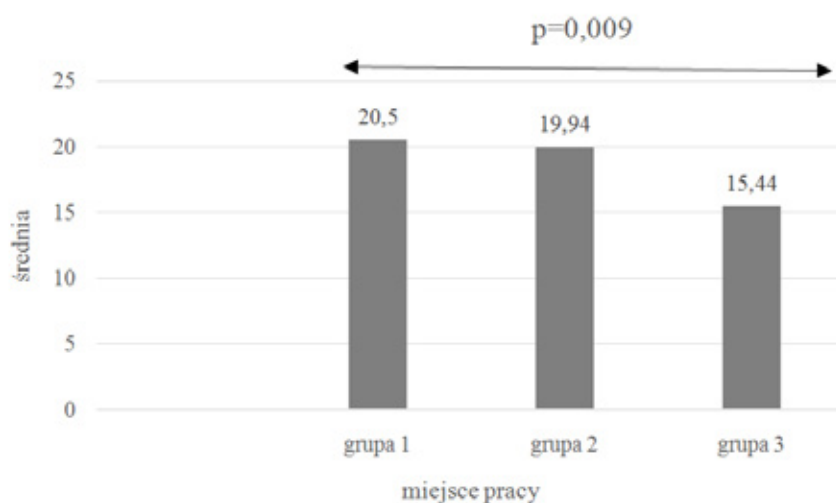
No statistically significant correlation was found between the level of respondents' knowledge and sociodemographic variables such as age ( $p > 0.05$ ) and place of residence ( $p > 0.05$ ). Yet, a statistically significant but weak correlation was observed in the analysis of the relation between the respondents' period of employment and their level of knowledge ( $p = 0.027$ ;  $Rho = -0.241$ ). Moreover, the level of respondents' knowledge differed greatly depending on their education ( $p = 0.003$ ) and workplace ( $p = 0.009$ ) (Figure 2 and 3). The average score in the test was higher in the group of nurses with Master's degree ( $M = 20.55 \pm 5.29$ ) than in the combined group of certified nurses and nurses with Bachelor's degree ( $M = 15.83 \pm 7.38$ ). The group of respondents working on wards with a high probability of taking care of a PEG patient scored higher in the test ( $M = 20.50 \pm 7.15$ ) than the respondents working on wards with moderate ( $M = 19.94 \pm 5.32$ ) or low ( $M = 15.44 \pm 7.02$ ) probability of providing such care.



**Figure 2. Nurses' education and their level of knowledge**

**Rycina 2. Poziom wykształcenia a poziom wiedzy pielęgniarek**

Source materials: Study based on the authors' own research

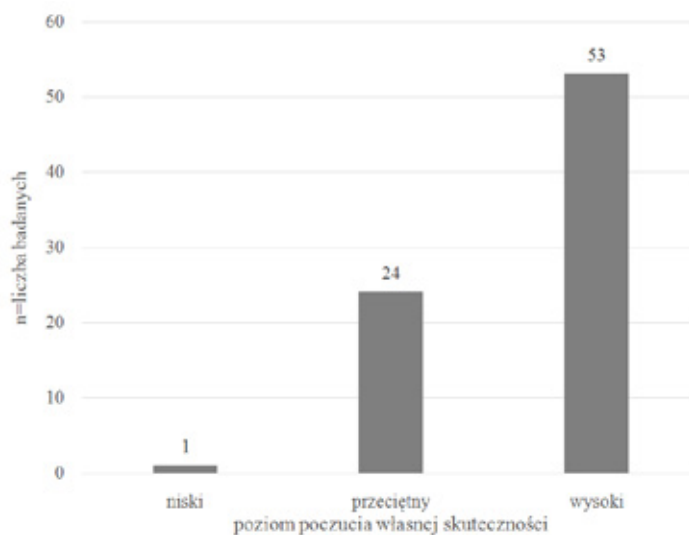


**Figure 3. Nurses' workplace and their level of knowledge**

**Rycina 3. Miejsce pracy a poziom wiedzy pielęgniarek**

Source materials: Study based on the authors' own research

The sense of self-efficacy was assessed as well with the application of the Generalized Self-Efficacy Scale. An analysis of the collected material showed that, in general, the examined nurses had a high sense of self-efficacy ( $M=30.45\pm 2.86$ ). The findings are presented in Table 2 and Figure 4.



**Figure 4. Distribution of self-efficacy according to GSES**

**Rycina 4. Rozkład poczucia własnej skuteczności według skali GSES**

Source materials: Study based on the authors' own research

No statistically significant correlation was observed between the level of knowledge and the index of self-efficacy ( $p>0.05$ ).



## Discussion

Malnutrition is a condition in which, due to insufficient nutrient absorption or intake, there occur negative changes in body composition and numerous negative consequences including a considerable deterioration of psychophysical functions of the organism [12]. Apart from the loss of body mass, negative consequences of malnutrition include a decline in psychomotor functions, weakened muscle strength, impaired immunity, anaemia, water-electrolyte imbalance or functional impairment of cardiovascular, respiratory and digestive systems. These disorders are responsible for a worse prognosis for patients' primary disease, they increase the incidence of infections or complications in wound healing and, consequently, prolong patients' hospitalization and increase its frequency, which accounts for a rise in mortality rate [13].

Nurses play a crucial role in malnutrition prevention and treatment because, due to their direct contact with patients, early identification of risk factors and malnutrition symptoms as well as participation in nutritional treatment, they are an essential element of interdisciplinary care provided to patients who suffer from the problem of insufficient nutrition [14].

Percutaneous endoscopic gastrostomy (PEG) is a method of enteral nutrition applied in the case of patients at risk of malnutrition and undernourished patients in specific clinical conditions. PEG is a recommended and efficient method of nutrition for patients suffering from, for example, neurogenic dysphagia (vascular stroke, Parkinson disease), some types of cancer and even dementia in its later stages [15]. PEG is applied in nutrition of people of all ages, elderly people, middle-aged people and children (including newborns), which confirms the universality of this method of nutrition [16]. It is particularly important in the context of the latest recommendations on nutritional treatment, which emphasize numerous advantages of enteral treatment applied as long as possible even to a minimal degree [17].

The aim of the study was an analysis of the correlation between nurses' knowledge about care provided to PEG patients and their sense of self-efficacy. The study was carried out with the application of a Polish version of the Generalized Self-Efficacy Scale (GSES) and a specially designed questionnaire which included a knowledge test and questions checking subjective assessment of knowledge, experience and qualifications connected with taking care of PEG patients. The study was conducted in a group of 85 female nurses from Małopolska region participating in various forms of postgraduate courses. The average age of participants was  $40.21 \pm 9.77$  and, on average, they worked in the nursing profession for  $17.49 \pm 10.57$  years.

In this study the respondents made a subjective assessment of the level of their knowledge and qualifications necessary for providing proper care to PEG patients. Most of them assessed their level of knowledge as high (21.2%), or average (52.9%). The others considered their level of knowledge to be low or very low. A similar percentage of the respondents, over three quarters, believed that their qualifications for taking care of PEG patients are high or average.

On the other hand, the results of the knowledge test indicate that nearly 69% of the respondents could not calculate the time of tube feeding and almost 37% failed to remember about PEG patients' oral hygiene. Only half of the respondents had sufficient knowledge about possible complications resulting from gastrostomy – another important aspect is nurses' experience in taking care of gastrostomy patients. The study showed that only 49.5% of the examined nurses have had such experience. This phenomenon can be explained by the fact that most of the respondents worked on wards with low (45,8%) or moderate (37,6%) probability of taking care of PEG patients. General results of the test confirm this assumption as the highest average scores in the test were obtained by nurses whose workplaces were connected with the highest probability of taking care of PEG patients, whereas the respondents working in places with a low probability of taking care of such patients scored much lower. It should be pointed out that a statistically significant correlation was observed between the level of education and the general result of the knowledge test. Nearly half of the respondents who decided to participate in the study had a Master's degree

in nursing. Their average score was 20.55, while the average score of the others was 15.83. Similar results were obtained by other authors, who also proved that along with an increase in the level of education, the number of correct answers in the knowledge test increased as well [18; 19].

No correlation was found in this study between the respondents' knowledge and selected socio-demographic data. In this respect, Bronka's [19] findings were different and they indicated that older respondents were more likely to give correct answers. In turn, the study conducted by Shahin [18] does not confirm such a correlation, assuming that younger respondents are also nurses who have just received their diplomas in nursing and, therefore, they are more eager and able to soak up knowledge as compared to their older colleagues. On the other hand, in the author's own study a low correlation was observed between the respondents' period of employment and their level of knowledge. Similar results were obtained by Bronka [19], who even discovered that a longer period of employment was connected with a decrease in nurses' knowledge.

An analysis of the aforementioned findings leads to a conclusion that the level of knowledge of medical staff about taking care of PEG patients is not satisfactory regardless of their education or period of employment.

The sense of self-efficacy allows for predicting intentions and actions in various spheres of human activity and personal beliefs about one's self-efficacy influence one's assessment of personal resources in a difficult situation. The stronger the beliefs about one's self-efficacy, the higher objectives people tend to set and the more engaged they are in deliberate actions despite of failures and obstacles [11]. Bearing these assumptions in mind, the authors of this study decided to assess nurses' sense of self-efficacy and its correlation with the level of knowledge about taking care of gastrostomy patients. Nurses are a professional group characterized by a strong sense of self-efficacy. It is confirmed not only by the authors' own study but also by the results of analyses conducted by other authors [20; 21; 22]. In the author's own study over half of the nurses had a high sense of their self-efficacy with the general score of 30.45, which was comparable to the findings obtained in the study by Nawalana et al. [23] ( $M=32.22$ ). However, an analysis of the findings did not show a statistically significant correlation between one's sense of self-efficacy and the level of knowledge about taking care of PEG patients ( $p=0.143$ ). On the other hand, in the study conducted by Nawalana et al. [23] no correlation was found between the index of nurses' self-efficacy and the level of their efficiency in providing care to patients ( $p=0.07$ ).

### **Implications for nursing practice**

These findings are only a preliminary characteristic of the examined phenomenon and they cannot be generalized. One of the limitations of this study was a small number of respondents (85) and insufficient number of nurses who have experience in taking care of PEG patients working on the wards such as palliative care, surgery or oncology. Also it would be advisable for researchers conducting further studies to include representatives of both sexes and a higher number of nurses with a shorter period of employment who recently qualified for the nursing profession.

It is also essential to determine respondents' needs and expectations connected with increasing their qualifications in enteral nutrition with the application of percutaneous endoscopic gastrostomy.

### **Conclusions**

1. The level of nurses' knowledge about taking care of patients with percutaneous endoscopic gastrostomy is unsatisfactory.

2. The type of nurses' professional education and their workplace had a significant impact on their level of knowledge about taking care of patients with percutaneous endoscopic gastrostomy.
3. Due to an increasing frequency of application and confirmed efficiency of PEG nutrition it is crucial for medical staff to increase their qualifications in this area following the latest scientific researches.
4. It is essential to conduct further studies in a bigger and more diversified group of respondents.

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