

# PREPAREDNESS OF FUTURE MEDICAL PERSONNEL TO SUPPORT WOMEN WITH STRESS URINARY INCONTINENCE: KNOWLEDGE OF ABSORBENT PRODUCTS AND IMPORTANT FACTORS TO CONSIDER IN CHOOSING THESE PRODUCTS

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A – study design, B – data collection, C – statistical analysis, D – interpretation of data, E – manuscript preparation, F – literature review, G – sourcing of funding

## ABSTRACT

**Background:** Stress urinary incontinence (SUI) is a chronic disease and a serious health problem in modern society.

**Aim of the study:** The present study aimed to evaluate the level of knowledge among students graduating from medical faculties regarding absorbent products for women suffering from SUI.

**Material and methods:** The study involved 1,581 participants who were students in the final year of their medical studies attending several different universities. The author's survey was used for the research. The chi<sup>2</sup> test was used for analysis. Differences with a P-value of <0.05 were considered statistically significant.

**Results:** Approximately 72% of nursing and midwifery students were familiar with absorbent products available on the Polish market used in cases of urinary incontinence, compared to about 54% of physiotherapy students and 35% of medical students. Approximately 77% of nursing and midwifery students were able to indicate which factors are important when selecting products for women suffering from SUI. About 55% of future physicians were knowledgeable about this subject and only 0.7% of physiotherapy students.

**Conclusions:** The group of nursing and midwifery students had the best level of knowledge necessary to assist a woman suffering from SUI in the selection of absorbent products.

**KEYWORDS:** absorbent products, stress urinary incontinence, women

## BACKGROUND

Stress urinary incontinence (SUI) is a chronic disease, and an embarrassing personal problem that has a huge impact on the quality of life of patients and their social and professional status. Presently, it is one of the most frequent afflictions occurring among women and is a serious health issue in modern society. Representatives of the World Health Organization (WHO) believe that this is one of the most important global health

problems of the 21<sup>st</sup> century. They estimate that more than 200 million people of both sexes suffer from this ailment in both the developed and developing countries and of the total, about 67% are women [1–4].

Urinary incontinence is a medical, social, psychological, economic and hygiene problem. SUI disrupts the normal functioning of a female patient within society, impedes interpersonal contact, sometimes even making it impossible for them to work, and causes great difficulties in maintaining personal hy-

giene. Furthermore, its treatment, rehabilitation and health care entail enormous costs and significantly increase household spending on personal hygiene and absorbent products [5–7].

Thanks to absorbent products, those suffering from urinary incontinence have the possibility to lead a relatively normal everyday life. These products are essential for people who have problems with urine retention as they make it possible not only to maintain proper standards of hygiene but importantly, protect against the development of infections of the genitourinary system. They are used as auxiliary measures in the treatment of urinary incontinence and in some cases when treatment does not produce the desired effect; they are the only protection available to a patient and can improve the comfort of their life [8–11].

Depending on the degree of urinary incontinence, lifestyle, and the patient's anatomy, absorbent products can be divided into the following categories: anatomic (urological) pads suitable for active people with low or moderate urinary incontinence; anatomic diapers for people who are physically active but with moderate or severe urinary incontinence; adult diapers which are intended for bedridden people or those with limited mobility; absorbent panties which are a kind of personal underwear with a special absorbent pad and absorbent layers and bed sheets to protect the mattress from becoming wet, while simultaneously isolating urine from the patient's skin which is extremely important especially during night-time rest [12–16].

When choosing absorbent products, patients must take many factors into account. One of the most important is the absorbency of the product, which varies according to the degree of urinary incontinence and the level of protection against unpleasant odors [17–20]. Fear of urinary leakage and the associated unpleasant odor are highly embarrassing and can negatively affect the individual's psyche and reduce self-esteem and lead to neurosis, depression and withdrawal from social contacts and social life. It is essential that these products are made of high-quality materials that allow sufficient air circulation, are skin-friendly and simultaneously protect against irritation and inflammation [21–23].

Urinary incontinence is a multi-faceted problem that affects women of all ages. Students in their final year at medical faculties will soon face direct professional contact with women suffering from this condition. Future physicians, physiotherapists, nurses and midwives will all be required to undertake effective measures to assist patients suffering from SUI, as such responsibilities are included in their professional capabilities. Certainly, the type of such assistance offered depends on the faculty, but the problem itself and prevention thereof will always be a forefront

part of patient care. Representatives of medical professions have a responsibility to improve the quality of life of women suffering from SUI. They should be aware that it is an important problem which deserves to be given more attention and medical representatives should have substantial knowledge about this condition.

## AIM OF THE STUDY

The aim of the study was to evaluate the level of knowledge of students graduating from medical faculties regarding absorbent products for women suffering from urinary incontinence.

## MATERIAL AND METHODS

### Study population

The study group included 1,581 students from the Jerzy Kukuczka Academy of Physical Education and the Medical University of Silesia in Katowice in the final year of their medical studies. The study involved 1,255 women and 326 men divided into 4 groups. Group M consisted of 432 students of the faculty of medicine, including 282 women and 150 men aged  $24.9 \pm 1$  years. Group P consisted of 402 physiotherapy students, including 288 women and 114 men aged  $25.4 \pm 3.8$  years. Group NM consisted of 258 students of nursing and midwifery, all women, aged  $30.1 \pm 7.6$  years: Group OM consisted of students of other medical faculties (dental, pharmacy, medical analytics, cosmetology and public health) and included 489 persons, including 427 women and 62 men aged  $24.8 \pm 4.1$  years who were considered as a control group.

### Data collection

The research was conducted before obligatory lectures at the university, and only once in each year, to prevent the possibility of students learning additional information resulting in misrepresentation of their actual knowledge.

### Inclusion criteria

All students in their last year of the university courses listed above.

### Exclusion criteria

Students who due to their personal situation could not participate in classes scheduled on the study day.

Verbal informed consent was obtained from all participants. Before the surveys were distributed, the subjects were asked if they agreed to fill in a survey. The students were also informed that anyone refusing to fill in the survey should notify the person distributing the surveys of their choice. All students in the study gave their consent to the survey and all accepted the survey questionnaires from the person distributing them and returned them afterwards.

## Methods

The author's questionnaire was verified by CEM – the Institute for Market Research and Public Opinion in Krakow – and was applied in the research. In the questionnaire concerning absorbent products used by women suffering from SUI, respondents were requested to list the absorbent products available on the Polish market that he or she was familiar with. It was also taken into account that the student being surveyed may not be knowledgeable of this subject, and therefore the questionnaire had the option of choosing "I do not know".

Respondents were also asked to express their opinion regarding factors which are significant when selecting absorbent products for women suffering from SUI. Respondents were provided with fifteen factors presented in alphabetical order. The respondents could choose the following answer options: very important, rather important, neutral, rather invalid, invalid and "I have no opinion".

When analyzing the answers given by the respondents, the factors under consideration were divided into the following categories: (1) physical characteristics of the patient: age, weight and mobility, (2) the patient's overall health condition: severity of urinary incontinence and mental condition, (3) product features: product quality, skin protection against irritation and absorbency, (4) convenience of use: ease of use/fit and packaging: individually wrapped, (5) economic and social factors: price of the product

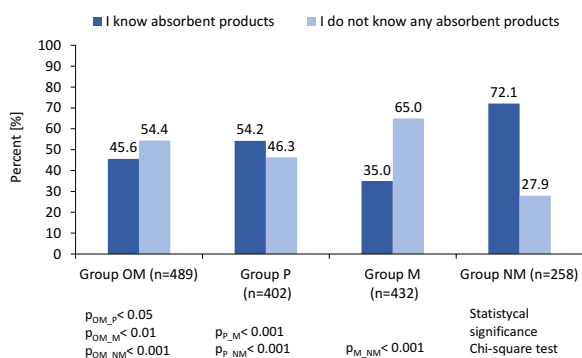


Figure 1. Percentage of respondents familiar with absorbent products for people with urine incontinence available on the Polish market and percentage of respondents not familiar with them

and family situation, (6) other factors: level of experience of the doctor/nurse, requests of family members and patient requests. The answers of the respondents were assigned numerical values: a very important factor=2, rather important=1, neutral=0, rather unimportant=-1, invalid=-2. The average scores for each factor were calculated, and the distribution of the scores obtained in each group were compared.

## Data sharing statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Statistical analysis

Excel 2016 and Statistica 9.0 software were used for archiving and statistical analysis. The  $\chi^2$  test was used for analysis. Differences at a level of  $P < 0.05$  were considered statistically significant.

## Ethical Considerations

As the study is not a medical experiment (due to its survey based nature), The Committee for Bioethics of the Medical University of Silesia in Katowice, Poland waived the need for ethics approval (KNW/0022/KB/40/18).

## RESULTS

The highest percentage of respondents able to list numerous absorbent products used for this condition was approximately 72.1%, recorded among the group of students in the fields of nursing and midwifery (NM) (Figure 1). In the group of physiotherapy students (P), 54.2% of respondents were able to list products. In the group of students of other medical faculties (OM) 45.6% were able to list products, and in the group of students of medicine (M), 35%. The statistical analysis showed significant differences between all groups ( $P < 0.05$ ).

The only response which were subject to further analysis were the respondents who had listed absorbent products used in stress urinary incontinence for women. Some respondents identified more than one absorbent product, and the average number of products listed in all groups amounted to 1.6 per person.

In all groups, the highest proportion of respondents indicated hygienic pads as an absorbent product for urinary incontinence. This answer was chosen by

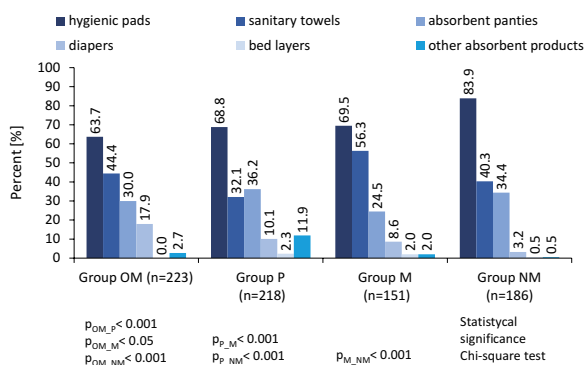


Figure 2. The percentage of respondents who listed various absorbent products available on the Polish market used by persons suffering from urinary incontinence

approximately 84% in group NM, approximately 70% in groups P and M, and in group OM approximately 64% of respondents chose this answer (Figure 2). The second most chosen answer was sanitary towels, and third was absorbent panties. These two answers were mentioned respectively by 56.5% and 24.5% of students from group M, 44.4% and 30% from group OM, 40.3% and 34.4% from group NM, and 32.1% and 36.2% from group P. Diapers were mentioned by approximately 18% of respondents from group OM, approximately 10% from group P, approximately 9% from group M, and 3% from group NM. Bed layers were mentioned by approximately 2% of the respondents from groups M and P, and 0.5% from group NM. Other absorbent products, including tampons and even catheters were indicated by 0.5% to 12% of the respondents. The statistical analysis showed significant differences ( $P < 0.05$ ) between all groups.

In the statistical analysis, no respondents were included who had abstained from answering the question, admitting that they did not have any opinion on the subject in question (Figure 3). The highest percentage of such respondents was among physiotherapy students (99.3%), whereas the lowest was among nursing and midwifery students (22.9%).

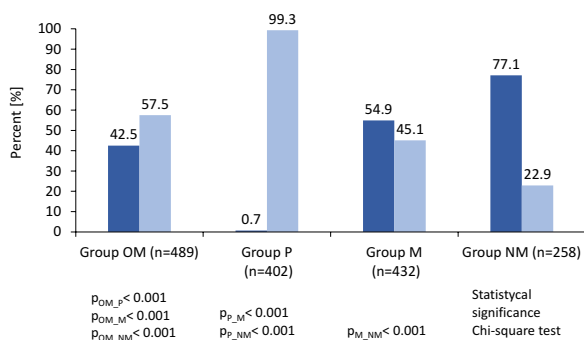


Figure 3. The percentage of respondents who indicated the factors that are important while selecting absorbent products for women suffering from stress urinary incontinence and respondents who did not have any opinion regarding this factor

As shown in Figure 4, the highest scores were among the group of nursing and midwifery students (NM), who considered many factors as important or very important, whereas the lowest score belonged to the physiotherapy students (P). While examining the average score in the first category (the physical characteristics of the patient), it was found that the highest number of students from group NM ( $\bar{x} = 1.21$ ) found that the age of a person with urinary incontinence was important when selecting absorbent products. The students in group M ( $\bar{x} = 1.16$ ) and group P ( $\bar{x} = 1.13$ ) were of a similar opinion to one another. The students of group OM ( $\bar{x} = 0.99$ ) rated the relevance of this factor as somewhat lower. The statistical analysis showed that the evaluation of the respondents with regard to age was significantly different between the group of students representing other medical faculties (OM) and the other groups ( $P < 0.05$ ).

Body mass, as an important factor while choosing absorbent products was also ranked highest in group NM ( $\bar{x} = 1.25$ ), whereas the average in group M amounted to  $\bar{x} = 1.03$ , and in groups P and OM, respectively  $\bar{x} = 0.92$  and  $\bar{x} = 0.90$ . The statistical analysis showed that group NM was significantly different from the other groups ( $P < 0.001$ ). Among the factors included in this category, the highest average in each group was recorded for patient mobility. In group NM, the average was the highest and amounted to  $\bar{x} = 1.56$ , in group M  $\bar{x} = 1.47$ , and in groups P and OM  $\bar{x} = 1.37$  and  $\bar{x} = 1.36$  respectively. Statistically significant differences were observed between group NM, group OM ( $P < 0.01$ ) and group P ( $P < 0.05$ ) (Figure 4).

The second category under consideration was the patient's state of health. As the studies showed, the average values of the severity of urinary incontinence were the highest of all averages recorded in the entire study. They amounted to  $\bar{x} = 1.83$  in group NM, and in the remaining groups approximately  $\bar{x} = 1.68$ . The statistical analysis of this part of the question indicated significant differences between group OM and group NM ( $P < 0.01$ ). The patient's mental condition was assessed on average at  $\bar{x} = 1.41$  by the students from group NM, 1.38 from group M,  $\bar{x} = 1.33$  by group OM, and  $\bar{x} = 1.20$  by group P. The statistical analysis showed significant differences only between the group of physiotherapy students and the group of nursing and midwifery students ( $P < 0.01$ ) (Figure 4).

The next category taken into consideration was "product features". The quality of the product was considered as important on average at  $\bar{x} = 1.66$  by students from group NM,  $\bar{x} = 1.60$  by group P,  $\bar{x} = 1.58$  by group OM and  $\bar{x} = 1.57$  by group M. The statistical analysis did not show significant differences between the groups. The importance of protecting the skin against irritation was assessed on average at  $\bar{x} = 1.72$  by students from group NM, and  $\bar{x} = 1.51$ ,  $\bar{x} = 1.46$  and  $\bar{x} = 1.43$  by respondents of groups M, P and OM re-



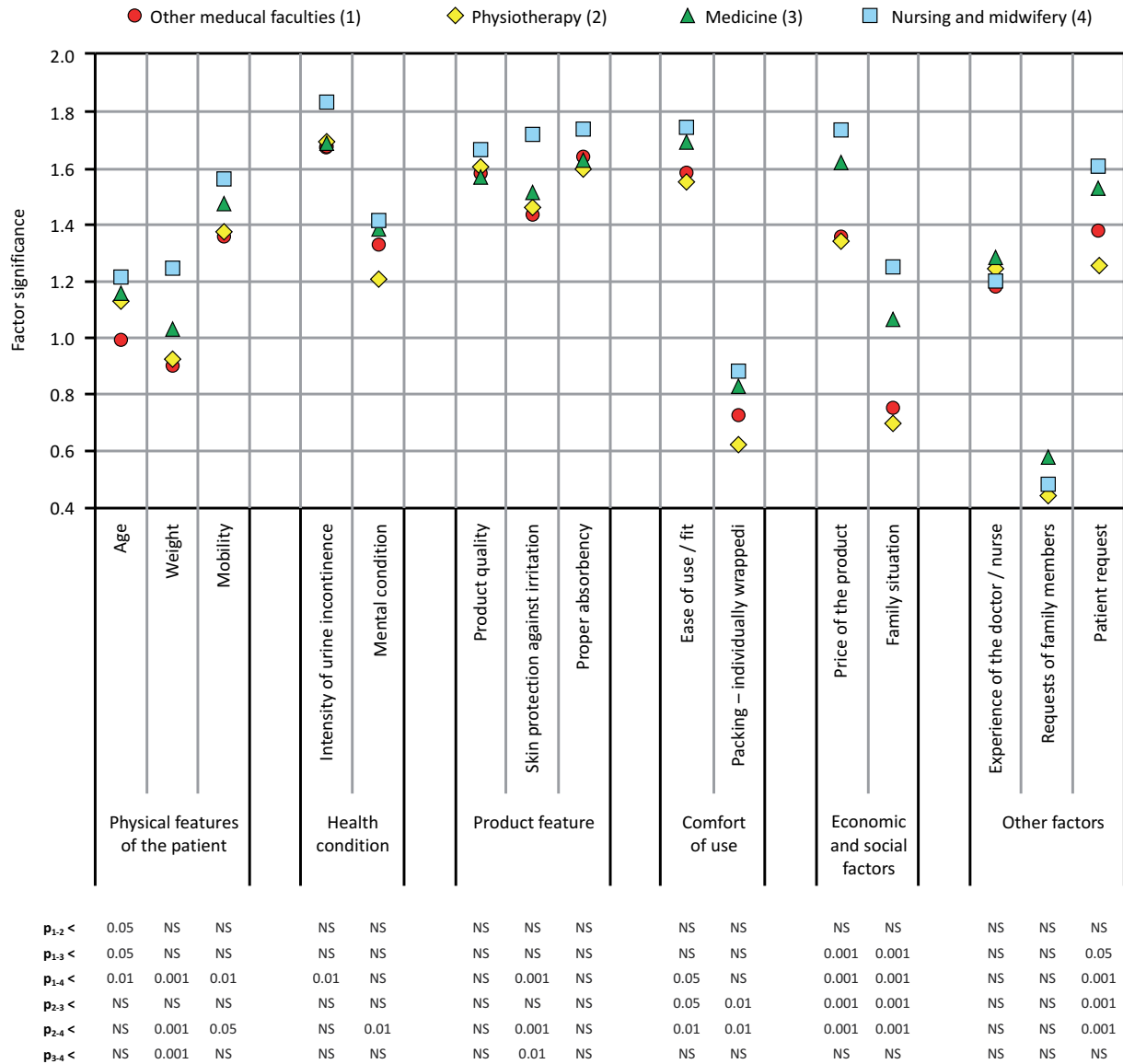


Figure 4. Evaluation of the factors considered as important in selecting absorbent products for women suffering from stress urinary incontinence (NS – non-significant)

spectively. The appropriate product absorbency was considered as an important feature of absorbent products by group NM at  $\bar{x}=1.73$  and by the other groups at approximately  $\bar{x}=1.6$ . The statistical analysis did not show any significant differences between the groups (Figure 4).

Among the next two factors included in the category “convenience of use”, the average scores varied. Ease of use (fit) was considered by the respondents as an important factor, whereas “packaging: individually wrapped” was far less important. The average results for these factors were respectively as follows:  $\bar{x}= 1.75$  and  $\bar{x}=0.89$  by group NM,  $\bar{x}=1.69$  and  $\bar{x}=0.84$  by group M,  $\bar{x}=1.58$  and  $\bar{x}=0.73$  by group OM, and  $\bar{x}=1.55$  and  $\bar{x}=0.63$  by group P. The statistical analysis of “ease of use” showed significant differences between group P and groups OM and P ( $P < 0.05$ ) and between groups P and M ( $P < 0.05$ ). In the second case, statistically sig-

nificant differences were observed between group P and groups M and NM ( $P < 0.01$ ).

Economic and social factors included the product price and family situation. According to the survey, respondents found that “product price” was more important, as was evidenced by the average score in each group:  $\bar{x}=1.73$  by group NM,  $\bar{x}=1.62$  by group M,  $\bar{x}=1.35$  by group OM, and  $\bar{x}=1.34$  by group P. When compared to “family situation” the average scores were as follows:  $\bar{x}=1.25$  by group NM,  $\bar{x}=1.06$  by group M,  $\bar{x}=0.76$  by group OM, and  $\bar{x}=0.70$  by group P. A statistical analysis of both factors showed significant differences between groups OM and P, and groups M and NM ( $P < 0.001$ ).

In the category “other factors”, the “patient’s request” was ranked the highest. The average assessment by group NM amounted to  $\bar{x}=1.61$ ; by group M,  $\bar{x}=1.52$ ; by group OM,  $\bar{x}=1.38$ ; and by group P,  $\bar{x}=1.25$ .

With regard to the distribution of assessment, there were statistically significant differences between groups OM and P, and groups M and NM ( $P < 0.05$ ). The influence of “experience of the doctor/nurse” on the selection of absorbent products was evaluated slightly lower ( $\bar{x} = 1.18$  to  $1.28$ ) and the lowest grade was allocated to the “requests of family members” ( $\bar{x} = 0.47$  to  $0.57$ ). In the evaluation of the last two factors, there were no significant differences between the groups (Figure 4).

## DISCUSSION

The broadest knowledge regarding absorbent products used by women with urinary incontinence was demonstrated by the group of nursing and midwifery students, and to a lesser extent but still comparable, by groups P and OM, and the lowest level by group M. Among future physicians, 65% of the respondents stated that they did not know any of the absorbent products available on the Polish market. Among modern absorbent products, the vast majority of respondents mentioned panty liners and sanitary towels as products for urinary incontinence.

No ordinary panty liners or sanitary towels are mentioned in the literature as absorbent products recommended for people suffering from this condition because of their low absorption ability (about 10 mL) [8]. In Poland there are four types of absorbent products, the costs of which are reimbursed by the National Health Fund (NFZ): anatomic (urological) pads, anatomic diapers, adult diapers and waterproof absorbent layers and bed sheets [12]. As mentioned above, anatomic (urological) pads are recommended for physically active people with low or moderate urinary incontinence. The absorbent material contained therein directs urine away from the skin, and thus prevents irritation [14,20]. They have an anti-odor control system and an anatomical shape, and their absorbency is much higher than that of the standard panty liners or sanitary towels mentioned by respondents, with an absorbency range of 100–500 mL [8,9].

Another absorbent product identified by respondents was an adult diaper, which is used by people suffering from more severe urinary incontinence and who have limited mobility. The diapers are produced in six sizes, thus making it possible to adjust them in terms of absorbency need and size of the patient. They are fixed around the hips with attached adhesive tape and on the inside, they have a barrier which prevents urine leakage. It is difficult to determine whether the diapers mentioned by respondents as an absorbent product are anatomical diapers which are actually used by people suffering from urinary incontinence. The absorbency of this product reaches approximately 1,800

mL and is therefore used by mobile people with moderate to severe urinary incontinence. In addition, there are specially designed panties to support the diaper, which simultaneously allow air circulation [10,11,13]. A small percentage of the three groups of respondents mentioned bed layers. Bed layers complement absorbent products and additionally protect bed sheets and mattresses from becoming soiled. They are designed for people with all types of urinary incontinence but their major disadvantage is the fact that the skin is not isolated from the urine, so they do not prevent irritation [10,11,13,14]. On the Polish market, absorbent panties are also available, which are thinner and more comfortable than anatomical diapers or adult diapers, but the costs are not reimbursed by the National Health Fund (NFZ). The above-mentioned absorbent products belong to the so-called auxiliary measures, of which the refunding rules are governed by the regulations of the Minister of Health. For example, people suffering from urinary incontinence are granted 60 anatomic pads per month, free of charge up to a price of 77 PLN or with a 30% additional charge for the price of 100 PLN [12]. These costs once again confirm that urinary incontinence is not only a medical and psychological problem but also an economic problem [18]. In the time of an ageing Polish population and increasing incidence of urinary incontinence, the costs for patients, their families and the general population will continue to increase [12].

Due to the different degrees of urinary incontinence, including different lifestyles, physiques and general health conditions as well as family, social and economic situations, it is important that absorbent products are appropriately designed to fulfill the individual needs and requirements of female patients so that they will correctly perform their function [15–18]. When indicating which factors are important when selecting absorbent products for women with stress urinary incontinence, nursing and midwifery students considered almost every factor mentioned as important or very important, which led to group NM having the highest opinion indicator. This group considered only the following factors as neutral: “request of family members” and “packaging: individually wrapped” compared with respondents from the other groups. The factor “packaging: individually wrapped” was considered by most respondents as neutral or rather unimportant, which may be surprising considering that this form of packaging is comfortable and convenient for women using such hygienic products [22].

The quality of each absorbent product is not only influenced by adequate protection of the patient from unexpected incidents of urine leakage and avoidance of related embarrassing situations, but also for skin care, i.e. protection against irritation and development of inflammatory conditions [14,20–22]. According to the research, respondents agreed that the

factors included in the category “product quality” are important or very important. In particular, the product absorbency provided is one of the most important criteria for the selection of these types of products. Therefore, products are usually available in four degrees of absorbency, e.g. hygienic pads are available in four sizes depending on their level of absorbency: mini, midi, extra and super [10–13].

When considering economic and social conditions, it is clearly observed that the respondents did not connect the two factors of “product price” and “the family situation” with each other. It is obvious that the family situation and household budget dictate which absorbent product a woman suffering from SUI can afford. The product price is most frequently associated with its quality, and sometimes a modest household budget does not allow a woman to buy the products which would be the most appropriate for her. It should also be taken into consideration that in many cases, in particular among the elderly, the number of absorbent products used per month is large, and this entails significant costs which are often difficult to afford for many families [15,18].

The physical features of the patient such as age, weight, mobility and health condition, e.g. the severity of the urinary incontinence and patient’s mental condition, determine which of the available absorbent products would best suit a particular person. One of the basic criteria for choosing absorbent products is the degree of urinary incontinence experienced by the patient. The research showed that respondents correctly regarded this factor as the most crucial. Level of physical activity is of great importance as well. Different types of absorbent products are recommended for physically active and mobile patients, compared with patients with limited mobility or the bedridden. Moreover, products with adhesive tapes that support adult diapers around the hips are used by people who may subconsciously and automatically remove absorbent products such as anatomical diapers [10–13,16,17,23–26].

It is surprising that out of the group of 402 physiotherapy students studying at different universities,

only 0.7% (28 people) chose to express their opinion as far as the qualities which are important in choosing absorbent products, whereas approximately 54% demonstrated knowledge about different types of such products. Among the group of nursing and midwifery students, the figure was about 77% and 72% respectively, in the group of medical students, about 55% and 35%, and in the group of students of other medical faculties, about 43% and 46%.

### Limitations of the study

The main limitation of this study was that it included only students from two universities: the Jerzy Kukuczka Academy of Physical Education and the Medical University of Silesia in Katowice, however, the last is one of the largest universities in Poland.

### Clinical implications

Only one examined group has shown satisfactory knowledge about absorbent products to support women with SUI, which indicates an urgent need to develop and implement educational programs for students of medical faculties which include the issue of SUI.

### CONCLUSIONS

The group of nursing and midwifery students had the highest level of knowledge necessary to assist women suffering from SUI in the selection of absorbent products. Panty liners were incorrectly identified as absorbent products used by women with urinary incontinence in all studied groups by the majority of respondents.

### List of abbreviations

SUI – Stress urinary incontinence

NFZ – National Health Fund

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Word count: 4679

• Tables: 0

• Figures: 4

• References: 26

#### Sources of funding:

The research was funded by the authors.

#### Conflicts of interests:

The authors report that there were no conflicts of interest.

#### Cite this article as:

Witkoś J, Hartman-Petrycka M.

Preparedness of future medical personnel to support women with stress urinary incontinence: knowledge of absorbent products and important factors to consider in choosing these products.

*Med Sci Pulse* 2021; 15(1): 33-40. DOI: 10.5604/01.3001.0014.8293.

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Received: 28.11.2020

Reviewed: 11.01.2021

Accepted: 18.01.2021