

Associations between overweight and obesity and health enhancing behaviours among female nurses in Poland

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Abstract

Introduction and objective. The nursing profession entails many negative factors and high risk of chronic diseases, including overweight and obesity. The aim of the study is to investigate the prevalence of overweight and obesity and health enhancing behaviours in Polish female nurses, and associations between overweight and 4 groups of such behaviours, age and shift work.

Materials and method. The analysis covered data obtained through cross-sectional survey carried out in a group of 994 nurses with an average age of 43. The analysis covered answers about 29 health-enhancing behaviours divided into 4 categories (subscales): 1) nutrition, 2) physical activity, 3) sleep, rest and behaviours related to mental health, 4) preventive behaviours. They were analysed through the validated Positive Health Behaviours Scale for adults. The analysis also covered answers about avoiding drinking large amounts of alcohol in one go, not smoking, avoiding passive smoking, not abusing unprescribed drugs.

Results. The prevalence of overweight and obesity was 44%. Of 29 health behaviours concerned with nutrition, physical activity, sleep, rest, and mental health, preventive behaviours, 3 were exhibited *always or almost always* by over a half of the nurses. Health behaviours were more common in nurses whose BMI was normal than in nurses with BMI ≥ 25.0 . Age and low physical activity levels were related to overweight and obesity in nurses.

Conclusions. The study revealed a high prevalence of overweight and obesity and many deficits in health behaviours. Obesity and health behaviour deficits pose risks to the health of nurses, limit their involvement in prevention and treatment of patient obesity and impact as health educators. It is essential to engage in actions for health promotion among nurses.

Key words

health behaviours, lifestyle, obesity, overweight, nurses

INTRODUCTION

In all countries worldwide, nurses constitute the largest group of health care providers. The nursing profession entails a great number of negative factors and health risks associated with the impact of biological, chemical, physical, ergonomic, psychological factors, as well as work organisation and rhythm [1]. Nursing is a profession that entails high stress levels and a great risk of occupational burnout, motor dysfunctions, infectious diseases (tuberculosis, HIV, hepatitis B, C and A), as well as the risk of becoming overweight or obese [2, 3].

Overweight and obesity are the most common health problems for nurses. The overweight/obesity rates depend on the region, country, race, ethnic group, age and work mode [4]. In many countries, the prevalence of overweight/obesity

in nurses is higher compared to the average population. In a study conducted in 2008–2011 in Poland, around 64% of analysed nurses were found to be overweight/obese [5].

The prevalence of overweight and obesity, including abdominal obesity, is higher in nurses who work in shifts, especially night shifts. The longer the time shift work has been performed, the greater the risk of obesity [6], and the higher the number of night shifts per month, the greater still the obesity risk [5]. This is caused by a number of factors, such as: inadequate nutrition (irregular meal pattern, abnormal eating behaviour, excess sugar consumption, frequent unhealthy snacks), low levels of physical activity, sleep deprivation, negative emotions and increased stress levels [7, 8, 9].

A variety of factors contribute to overweight and obesity, including metabolic and genetic abnormalities; however, in the overwhelming majority of cases they appear to be primarily linked to an unhealthy lifestyle. Results of numerous studies demonstrate that there are multiple deficiencies in that respect among nurses in various countries. Those deficiencies include: poor nutrition, low physical activity,

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sleep deprivation, few rest breaks, health monitoring and screening below desirable levels, smoking and alcohol abuse [7, 10].

Overweight and an unhealthy lifestyle should be viewed in the context of the health of nurses and in the context of their professional role. Overweight increases the risk of cardiovascular diseases, diabetes, diseases of the musculoskeletal system, cancer and premature aging. Obesity in nursing is associated with various functional limitations connected with poor health, limited mobility, flexibility, low endurance, and increased numbers of lost-time injuries in health care, while performing strenuous tasks such as lifting and assisting adult patients [11].

Nurses can also significantly influence patients who try to lose weight and maintain a healthy weight. An obese nurse will fail to be a good role model for the patients in her care. The chance of her success in motivating patients to monitor their weight is limited, especially seeing that more than half of the analysed obese nurses lacked motivation to change their own lifestyle [12]. Nurses provide various groups of patients with formal and informal health education. The deficits in their health behaviours hamper such education and the modelling of positive behaviours in patients.

OBJECTIVE

The aims of this study was to indicate the prevalence of overweight and obesity as well as health enhancing behaviours among Polish female nurses; to describe relations between overweight and different groups of such behaviours, age and shift work of nurses. The reason for conducting the study was the fact that no such research has been previously undertaken into the relationship between health enhancing behaviours and overweight and obesity rates in nurses in Poland. The present study fills the gap and can serve as a starting point for development of health promotion initiatives aimed at nurses.

MATERIALS AND METHOD

Study design and population. The study involved a cross-sectional survey conducted in May 2016 in a group of female nurses. All professionally active nurses, who participated in a specialization training programme in 2016, were invited to take part in the study. Potential participants were identified and recruited from the Centre for Postgraduate Education for Nurses and Midwives in Warsaw, Poland. The cohort consisted of 2,542 registered nurses, with a return rate of 40%. Thus, 994 participants took part in the study. The cohort was representative in terms of the mean age ($t=0.824$; $P=0.426$) and the selected specialization ($\chi^2=0.046$; $P=0.831$). With this cohort size and the number of registered nurses working in Poland ($N=280,000$), the error margin was 3.2% (95% confidence level and proportion 0.50).

Participation in the study was voluntary and anonymous. Results were collected using an auditorium method (self-report questionnaire), whereby respondents filled in the questionnaires individually in one room. By virtue of the large number of participants in the study, the random survey was conducted in 20 turns. The place and procedure of the study was identical each time.

Table 1 reports the demographic characteristics of the 994 participants who completed the study. Mean age of the study participants – 43.1 years ($SD=7.21$); professional experience – 20.0 years ($SD=8.45$).

Table 1. Sociodemographic characteristics of the study sample ($N=994$).

	N (%)
Place of residence	
Countryside	288 (29.0)
Village (population up to 50 thousand)	212 (21.3)
Small town (51–200 thousand inhabitants)	204 (20.5)
Large town (201–500 thousand inhabitants)	147 (14.8)
City >500 thousand inhabitants	143 (14.4)
Education	
Secondary medical	271 (27.3)
Bachelor's degree	298 (30.0)
Master's degree	419 (42.2)
Ph.D.	6 (0.5)
Specialisation	
Conservative nursing	180 (18.3)
Anaesthesiological nursing	172 (17.5)
Surgical nursing	132 (13.4)
Operating room nursing	89 (9.0)
Psychiatric nursing	55 (5.6)
Cardiological nursing	48 (4.9)
Neonatal nursing	48 (4.9)
Obstetric nursing	46 (4.7)
Epidemiological nursing	43 (4.4)
Geriatric nursing	43 (4.4)
Other	138 (13.9)
Place of work¹	
Municipal hospital	385 (32.8)
Clinical hospital	212 (18.1)
Home care	201 (17.1)
General practitioner outpatient clinic	70 (6.0)
Specialised outpatient clinic	57 (4.9)
Environmental care	50 (4.3)
Other	197 (16.8)
Shift work	
Yes	725 (72.9)
No	269 (27.1)

¹ Study participants could indicate more than one place of work

Ethics Statement. According to the Bioethics Committee 'non-interventional studies do not require the opinion of the Bioethics Committee, in accordance with Art. 37a Pharmaceutical Law Act (*Journal of Laws* 2001, No. 126, item 1381).

OBJECTIVES

The objective of the study and its anonymity throughout the research process and the voluntary nature of their participation were explained face-to-face to participants before administration of the questionnaire, and their informed consent was obtained. They were also informed that the study was for research purposes only, and that the findings were to be limited to research-oriented purposes. Information about the details of the study, data collection and analysis, names of the researchers and contact information were also included.

Variables. 1) *Health enhancing behaviours.* The analysis covered answers about 29 health enhancing behaviours divided into 4 categories (subscales): 1) nutrition, 2) physical

activity, 3) sleep, rest and behaviours related to mental health, and 4) preventive behaviours. They were analysed through the validated Positive Health Behaviours Scale for adults [13]. The respondents defined the frequency of engaging in those behaviours on a 4-point scale: *always or almost always* (3 points), *often* (2 points), *sometimes* (1 point), *never or almost never* (0 points). The correct (desired) answer was *always or almost always*. Cronbach's alpha was 0.844 for the full scale, and 0.623 – 0.761 for particular subscales. The result was deemed satisfactory.

2) *Avoiding risk behaviours.* Avoiding health-compromising behaviours counted as a health positive behaviour and an element of a healthy lifestyle. The analysis covered answers about avoiding drinking large amounts of alcohol in one go, not smoking, avoiding passive smoking, not abusing unprescribed drugs. The statements were formulated in such a way so as to define desirable, health-conscious behaviours. If a given statement was true for the respondent, they marked the box: *I do it*.

3) *Body Mass Index.* The height and weight details provided by the respondents (self-reported data) were used to calculate the Body Mass Index (BMI). The nurses were classified into 5 groups: underweight, healthy weight, overweight, first degree of obesity, second and third degree of obesity [14]. Two groups of respondents were included in the analyses of relationships between overweight and obesity and the health enhancing behaviours: respondents with a healthy weight (BMI 18.5–24.99; N=548) and respondents with overweight and obesity (BMI ≥25.00; N=434). Underweight respondents were not included in the analyses due to their small numbers (N=12).

4) *Shift work.* The fact of whether or not the respondents performed shift work was included in the analyses based on self-reported data.

Statistical analysis. All statistical analyses were performed in STATISTICA 13.1 (StatSoft®, Inc.) under the licence held by the Medical University of Warsaw. The relationship between the age of respondents and BMI values was estimated by means of Jonckheere-Terpstra test for ordered alternatives. The significance of differences between the respondents with a healthy weight and the respondents with overweight or obesity was evaluated with Pearson's chi-square test. The impact of particular behaviours on the overweight/obesity rates was determined through computation of odds ratio (OR) with 95% confidence intervals. Logistic regression was applied to analyse the factors that predispose to overweight/obesity. The proposed logistic model examined 6 potential predictors: age, shift work, number of points for each of the 4 subscales of health enhancing behaviours. The modelled dependent variable was the occurrence of overweight or obesity (BMI ≥ 25.00). The Rosenbrock and Quasi-Newton methods were employed, with specification of asymptotic standard errors. The goodness of fit of data with the proposed logit function was assessed by the Hosmer–Lemeshow test. P-values <0.05 were considered statistically significant.

RESULTS

Prevalence of overweight and obesity among nurses. The average BMI in the analysed group was 25.1 (±4.36). Among the respondents, a min. of 16.3 and max. of 67.2. 44% were

Table 2. Analysed nurses (N = 994) according to BMI, age and shift work

BMI (kg/m ²)	Respondents		Age (years)		Shift work (%)	
	N	%	Mean	SD	Yes	No
< 18.5 underweight	12	1.2	39.3	7.96	25.0	75.0
18.5–24.99 normal range	548	55.1	41.8	7.48	27.5	72.5
25.00–29.99 pre-obese	323	32.5	44.7	6.35	28.7	71.3
30.00–34.99 obese class I	87	8.8	45.6	6.61	20.7	79.3
>35.00 obese class II and III	24	2.4	45.8	6.70	25.0	75.0
					P<0.001* P=0.674**	

* Jonckheere-Terpstra test

** Pearson's chi-square test

found to be overweight or obese, with only 1% of the nurses were underweight (Tab. 2). As the age of the respondents increased, so did the BMI values (Jonckheere-Terpstra test, $P<0.001$). Most of the respondents (73%) worked in shifts – the share of respondents who worked in shifts was comparable in particular BMI groups ($\chi^2=2.34$, $df=4$; $P=0.674$).

Health enhancing behaviours among nurses. In the entire analysed group, of the 29 health behaviours included in the questionnaire only 3 were adhered to with the desired frequency, i.e. *always or almost always* (Tab. 3), by more than a half of the nurses (brushing teeth at least twice a day – 82.2%; measuring blood pressure – 61.2%; having smear tests – 55.4%). The lowest percentage included nurses who coped well with stress (6.6%), avoided snacking (9.1%), spent at least 20–30 minutes a day resting/relaxing (9.6%).

The nurses with a healthy weight engaged in significantly more health enhancing behaviours (25/29) with desired frequency. Statistically significant differences were identified in the case of 11 analysed behaviours: 5 of them applied to nutrition, 4 (all) applied to physical activity, and 2 applied to oral hygiene. 5 of those behaviours were found to be especially important in significantly reducing the risk of overweight/obesity: *limiting the intake of animal fats* (OR=0.49; CI [0.34–0.71]), *increasing physical activity and physical effort in everyday life* (OR=0.50; CI [0.36–0.71]), *performing strength-building exercises for the main muscle groups at least twice a week* (OR=0.52; CI [0.36–0.75]), *exercising daily for at least 30 min. with moderate or vigorous intensity* (OR=0.53; CI [0.34–0.82]), and *limiting the time spent watching television* (OR=0.56; CI [0.39–0.81]) (Tab. 3).

Avoiding risk behaviours. The majority of respondents did not engage in any risk behaviours named in the questionnaire. The results were least positive in the area of active and passive smoking (Tab. 4). The differences between groups divided according to BMI values were not statistically significant.

Factors that predispose nurses to overweight and obesity. The proposed logistic regression model was statistically significant ($\chi^2=69.6$; $P<0.001$; R-squared Nagelkerke = 0.092), and the logit function was adequate (Hosmer-Lemeshow test: 12.7; $P=0.124$). Estimation of function parameters revealed that only 2 predictors – age and physical activity level – were important factors that predisposed nurses to overweight/obesity. The risk of overweight/obesity grew significantly with the age of the respondents (OR=1.067; Wald test = 42.6; $P<0.001$). The respondents who obtained high scores in the

Table 3. Health enhancing behaviours taken with desired frequency (i.e. *always or almost always*): total and according to BMI (%).

Behaviours	Total	BMI		OR*	95%CI	P**
		18.5–24.99	≥25.00			
I. Nutrition						
Having at least 3 meals a day with a regular meal pattern	36.9	39.8	33.3	0.76	0.58–0.98	0.036
Having breakfast at home every morning (more than a glass of milk, tea or other beverage)	46.0	46.9	44.9	0.92	0.71–1.18	NS
Eating fruits at least once a day	44.5	46.5	41.7	0.82	0.63–1.06	NS
Eating vegetables at least once a day	39.0	42.0	34.8	0.74	0.57–0.96	0.021
Drinking at least 2 glasses of milk, kefir or yoghurt daily	13.4	15.8	9.7	0.57	0.34–0.84	0.005
Limiting the intake of animal fats	15.4	19.1	10.4	0.49	0.34–0.71	<0.001
Limiting the intake of salt	19.1	21.1	16.1	0.72	0.52–0.99	0.048
Limiting the amount of consumed sweets	13.6	14.7	12.2	0.81	0.56–1.17	NS
Avoiding snacks between meals	9.1	10.4	7.9	0.74	0.47–1.15	NS
II. Physical activity						
Exercising daily at least 30 minutes with moderate or vigorous intensity (e.g. jogging, brisk walking, practicing sport, gardening, working on a farm)	10.7	13.1	7.4	0.53	0.34–0.82	0.004
Doing strength-building exercise for main muscle groups at least twice a week (e.g. raking leaves, carrying shopping bags /a heavy backpack/, climbing stairs, exercise for abdominal muscles)	16.2	20.0	11.5	0.52	0.36–0.75	<0.001
Increasing physical activity and physical effort in everyday life (e.g. walking instead of driving, taking a bus, climbing stairs instead of using elevators)	18.4	22.4	12.6	0.50	0.36–0.71	<0.001
Limiting the time spent watching television	15.1	18.2	11.0	0.56	0.39–0.81	0.002
III. Sleep, rest and behaviours related to mental health						
Getting at least 6–7 hours of sleep every night	25.7	26.9	24.4	0.88	0.66–1.17	NS
Going to bed at regular hours	11.1	12.5	9.4	0.73	0.48–1.09	NS
Spending at least 20–30 minutes a day resting/relaxing (e.g. chilling out, doing relaxation exercises, doing what one likes)	9.6	10.9	7.6	0.67	0.43–1.05	NS
Coping well with stress	6.6	6.7	6.2	0.92	0.55–1.53	NS
Being positive about oneself and the world	20.6	22.5	17.9	0.75	0.54–1.03	NS
Asking other people for help in difficult situations (e.g. family, friends)	14.2	15.5	12.6	0.79	0.55–1.14	NS
Spending time with colleagues/friends at least once a month	23.7	23.8	22.8	0.94	0.70–1.27	NS
IV. Preventive behaviours						
Taking vitamin D from September – April	11.9	12.7	10.8	0.83	0.56–1.23	NS
Avoiding excessive sunbathing (e.g. using creams with sun protection factor, head cap, avoiding sun exposure between 10 am – 2 pm)	28.8	28.5	29.4	1.04	0.79–1.38	NS
Brushing teeth at least twice a day	82.2	85.1	78.6	0.64	0.46–0.89	0.008
Having a dental check-up every 6 months	43.2	46.4	39.1	0.74	0.57–0.96	0.022
Measuring blood pressure at least once a year	61.2	59.1	63.4	1.20	0.93–1.56	NS
Having a flu vaccine according to recommendations	10.7	10.5	11.0	1.05	0.70–1.58	NS
Performing a breast self-examination once a month	23.8	24.4	22.8	0.91	0.68–1.23	NS
Having a smear test at least once every 3 years or as prescribed by a physician	55.4	57.6	52.4	0.81	0.63–1.04	NS
If sick and having a doctor's appointment, following doctor's recommendations	49.8	51.6	47.6	0.85	0.66–1.09	NS

* odds ratio (OR< 1.00 lower risk of overweight, OR>1.00 higher risk of overweight)

** Pearson's chi-squared test

95%CI – 95% confidence interval, NS – statistically insignificant

Table 4. Avoiding risk behaviours: total and according to BMI (%)

Behaviours	Total	BMI		OR*	95%CI	P**
		18.5–24.99	≥25.00			
Not drinking large amounts of alcohol in one go (not becoming inebriated)	81.4	80.6	82.8	1.15	0.84–1.61	NS
Not smoking	70.9	72.7	68.5	0.81	0.62–1.07	NS
Avoiding passive smoking	64.5	65.8	62.5	0.87	0.67–1.13	NS
Not abusing drugs not prescribed by physicians (painkillers, sedatives, sleeping pills)	78.9	78.7	78.9	1.01	0.74–1.37	NS

* odds ratio (OR< 1.00 lower risk of overweight, OR>1.00 higher risk of overweight)

** Pearson's chi-squared test

95%CI – 95% confidence interval, NS – statistically insignificant

Table 5. Odds ratios (OR) with 95% confidence intervals of shift-work, age, and points in 4 subscales of health behaviours for the prevalence of overweight and obesity in female nurses (N = 994).

Predictors	Effect size*	Odds ratio	95% confidence interval		Wald test	P-value
			Lower	Upper		
Intercept	-1.406	0.245	0.067	0.893	4.545	0.033
Shift work						
0: no	0.152	1.165	0.860	1.577	0.971	0.324
1: yes						
Age [years]	0.065	1.067	1.047	1.088	42.621	<0.001
Nutrition	-0.003	0.997	0.981	1.013	0.128	0.720
Physical activity	-0.029	0.972	0.957	0.987	13.347	<0.001
Sleep, relaxation and behaviours related to mental health	-0.001	0.999	0.984	1.014	0.024	0.876
Preventive behaviours	-0.003	0.997	0.983	1.012	0.114	0.736

* non-standardized effect

physical activity subscale were less likely to be overweight or obese, compared to the respondents with low scores (OR=0.972; Wald test = 13.3; $P<0.001$) (Tab. 5).

DISCUSSION

This study presents results of a survey on overweight and obesity and health enhancing behaviours conducted in a large group (N=994) of nurses in Poland. The nurses were preparing for the State specialty examination in various specialties. Most of them (73%), worked in shifts.

The prevalence of overweight and obesity was assessed via BMI values based on self-reported height and weight details. The use of this method was dictated by the results of research conducted by other authors. In the group of Polish nurses, the comparison of self-reported body weight and height with measured values showed high correlations and tendency for underreporting weight, particularly by heavier women, and over-reporting height by shorter women [5]. In a general US population, the discrepancies between self-reported and measured obesity were insignificant, with self-reported data underestimating measured prevalence by about 3%, and they remained relatively constant over time [15].

About 44% of female nurses were found to be obese or overweight. Their rates increased with age and were similar to the rates recorded in an average population of Polish women where they oscillated around 32% in a group of women aged 30 – 39, and around 60% in a group of women aged 50 – 59. Nonetheless, obesity and overweight were more common among nurses than in an average population of women with higher education aged above 15 (32%) [16]. In the analysed group, the percentage of overweight nurses was lower than that in Australia (60%) [17], Scotland (69%) [18], and the USA (49%) [19], and that recorded in a previous study conducted in Poland (64%) [5].

As a part of the survey, 4 groups of health behaviours were analysed: nutrition; physical activity; sleep, rest, and behaviours related to mental health; preventive behaviours. Of the 29 behaviours, only 3 were taken with the desired frequency (*always or almost always*) by more than a half of the nurses, and 9 behaviours were declared by fewer than 15% of the respondents. Nearly one in 3 nurses smoked or

were exposed to second-hand smoke, one in 5 abused alcohol and drugs not prescribed by a physician.

One of the expectations about the research was that health enhancing behaviours in nurses – individuals who received medical education and raise their qualifications under specialty programmes, should be common. The results, however, failed to meet the expectations. The numerous deficits identified in the lifestyles led by nurses are alarming on account of the health of this professional group, and on account of the patients, as the deficits may compromise their safety. Nurses who, as a part of their job, provide health education, cannot act as role models for patients, which means that the education will be less effective.

Deficits in health behaviours of nurses are a common problem in a number of countries. They include inadequate diet, low level of physical activity [20, 21, 22, 23, 24], not enough sleep and rest [25], health monitoring and screening below desirable levels [22]. In addition, nurses engage in a number of risky behaviours – smoking tobacco and alcohol abuse [25, 26, 27]. A comparison of deficits in health behaviours of nurses in various countries is not feasible due to the differences in applied research methods.

Overweight and obese nurses in the current study had far more deficiencies in terms of health behaviours than nurses whose BMI was within normal range. No differences were found between particular groups in terms of frequency of unhealthy behaviours. The greatest number of differences applied to physical activity levels and nutrition. These behaviours could predispose the analysed nurses to overweight.

No relation was found between overweight and shift work; therefore, the results of most research studies conducted so far have not been confirmed. This might be due to an overly general nature of the question about shift work, which did not highlight the shift pattern nor specify the time of working in shifts. In other research studies, a correlation was found between rotating night shift work and abdominal obesity [5]. A significant positive association between obesity and shift work duration was found among Korean nurses [28]. In Australia, rotating shifts of nurses were associated with both overweight and obesity, while night shifts were associated with obesity but not overweight [17]. The results prove the need for a more detailed description of a work schedule.

The results demonstrate that the nursing profession in Poland entails a high risk of overweight and obesity, as well as other health problems related to lifestyle. The results should be viewed in a wider context of the unfavourable working conditions of this professional group, made up mostly of women (98%), in Poland [29]. Currently, the group is ageing – the mean age of Polish nurses is 48.4 years of age and it has been systematically increasing throughout the years. There are insufficient numbers of nurses in relation to the size of the population: statistically 48 per 1,000 people [30]; in an OECD ranking, Poland ranks almost at the bottom in that respect [31]. This results in increased workloads: 95% of nurses are not able to fulfil all their duties within their nominal work hours, 53% are asked to do extra work, and one in 25% have been alone on hospital duty at least once during the last 3 months [32]. The economic status of nurses is low – their average wage constitutes 84% of the national average wage [33], their salary is twice as low as that of doctors [32]. Nurses sense that their salaries are too low in relation to the amount of work they do, which is why they organise protests and why younger nurses leave to work abroad [30]. Large numbers

of nurses take extra jobs that make their work hours even longer, increase workloads, fatigue, and make it even more difficult to engage in health behaviours.

While interpreting the findings, one should also take into consideration the limitations of the study. One limitation is the choice of the sample that included nurses who were working on increasing their professional qualifications. Perhaps the additional work they had to devote to prepare for the specialty exam had a negative impact on their lifestyle. In addition, all the data was self-reported, and the incidence of overweight and unhealthy behaviours might have been underestimated while healthy behaviours could have been overestimated. The research should be continued in other groups of nurses.

CONCLUSIONS

Despite the above-mentioned limitations, this cross-sectional study demonstrates a high prevalence of overweight and obesity among Polish female nurse, and obesity rates in this group are even higher than in a general population. There is a great risk that the rates will become even higher as a result of numerous deficiencies in health behaviours identified within the group. The greatest deficits were identified in the area of physical activity, nutrition, coping with stress, and rest. The age and low level of physical activity especially bore a significant relation to overweight and obesity. Obesity and deficits in health behaviours pose a risk to nurses' health and limit their efficiency in preventing and treating obesity in patients, and their impact as health educators. The situation calls for intensification of education of nursing professionals in the area of health-conscious lifestyles, obesity management and prevention, as well as implementation of interventional health promotion programmes aimed at nurses at the workplace.

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