

The Prevalence of overweight nurses in Italy: a systematic review

Citation: Brusini A., Tersigni S., Curatolo D., Giacomuzzi Trepiccione M., Papotti B. "The Prevalence of overweight nurses in Italy: a systematic review" (2024) *infermieristica journal* 3(2): 127-134. DOI: 10.36253/if-2428

Received: December 18, 2023

Revised: April 21, 2024

Just accepted online: May 29, 2024

Published: June 1, 2024

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Data Availability Statement: All relevant data are within the paper and its Supporting Information files. This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record.

Competing Interests: The Author(s) declare(s) no conflict of interest.

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Abstract

Introduction: A nurse is a healthcare professional who deals with health in an increasingly older world, and it is essential to maintain a healthy lifestyle. The aim of this study was to estimate the prevalence of overweight nurses and make a comparison with the general population.

Methods: A systematic review was performed on PubMed, Web of Science, Scopus, and Cinahl Plus; only primary studies conducted in Italy were considered, starting from 01/01/2013.

Results: The range of nurses with BMI ≥ 25 ranged from 29.6% to over 62%. Shift work, especially night shifts, is a risk factor for incurring a BMI ≥ 25 .

Conclusions: It is important to seek a policy of reducing the BMI among nurses, as the nursing population faces the risk of incurring overweight and obesity conditions, even if in smaller terms than the general population.

Keywords: Nurse, Obesity, Overweight, Lifestyle

Introduction

The prevalence of obesity worldwide has doubled since 1980 and almost a third of the world's population is classified as obese or overweight¹. According to the Osservasalute 2021 Report data, in 2020 47.6% of adults over 18 years old in Italy were overweight or obese, with the obesity condition present in 11.5% of the total population². Other data, obtained by Passi surveillance, claimed that people aged between

18-69, in the years 2021 and 2022³ were overweight in 32.6% of cases, and 10.4% were obese, with the total number of people with BMI ≥ 25 at 43.0%. An average loss of 2.7 years of life due to being overweight and obese was estimated, with a total health expenditure for these conditions of 9% an estimated annual loss of workers of 600,000 due to being overweight, and an employment of 2.8% of Gross Domestic Product². The Code of Ethics for Nurses, updated in 2019 by the

Federazione Nazionale degli Ordini delle Professioni Infermieristiche (FNOPI), comments that nursing is a profession that “promotes the culture of health by promoting healthy lifestyles and environmental protection from the perspective of the determinants of health, the reduction of inequalities and planning specific educational and information interventions for individuals, groups, and communities”⁴. Therefore, the nurse is a healthcare professional who acts in prevention and is an opportunity for many patients and the treatment of many pathologies⁵⁻⁷. Nevertheless, obesity represents a serious problem that must also be evaluated in the population of nurses themselves. In a longitudinal study that lasted 32 years, on a sample of over 110,000 US nurses it was found an average Body Mass Index (BMI) greater than 24 in women and greater than 25 in men, highlighting that a BMI between 18.5 and 22.4 was associated with healthier behaviors (e.g. absence of smoking, regular physical activity, and moderate alcohol consumption), leading to the lowest risk of premature death (e.g. cancer, effective cause, other causes)⁸. On the other hand, the condition of overweight and obesity represents a risk of incurring many pathologies early⁸.

From this perspective, this paper aims to analyze the data regarding BMI among the Italian nursing population and estimate the prevalence of nurses with a BMI ≥ 25 , through a review of the literature, comparing the results with the general Italian population, and proposing possible solutions to improve the current situation.

Methods

Description	Scope
Population	Italian nurses
Intervention	Observation of nurses BMI
Outcomes	Overweight prevalence
Study design	Only primary studies were considered

Table 1: PIOs question

Databases	Search strings (from 2013)	Results
1. PubMed	(body mass index) AND (nurse) AND (Italy)	49
2. Web of Science	body mass index (All Fields) AND nurse (All Fields) AND Italy (All Fields)	99
3. Scopus	((ALL (body AND mass AND index) OR ALL (bmi)) AND ALL (nurse) AND ALL (italy))	2973
4. CINAHL Plus	TX (body mass index or bmi) AND TX (nurse or nurses or nursing) AND TX (italy or italian)	1370
TOTAL		4491

Table 2: Summary of search strings⁷

An extensive literature research was conducted on “PubMed”, “Scopus”, “Cinahl Plus” and “Web of Science” databases, on 02/06/2023. The PIOs framework (Population, Intervention, Outcomes, Study design) is shown in Table 1. Table 2 shows the search strings and the number of results. BA and TS conducted the research. For BMI values, an individual is defined as underweight below the value of 18.49, normal weight for values between 18.59 and 24.99, overweight between 25 and 29.99, and obese greater than or equal to 30⁸.

Inclusion criteria were: only primary studies that investigate Italian Nurses; the presence of prevalence and/or numbers of overweight nurses; studies published after 01/01/2023.

Exclusion criteria were: reviews; no English or Italian languages; studies without prevalence or number of overweight nurses; mixed population nurses and other healthcare workers without specified data of each profession (prevalence or average BMI of only nurses); studies published before 01/01/2023.

Data Extraction: first author, year and the aim of the study, study design and adopted methods, participants, prevalence (and number of overweight and obese nurses, if reported).

Figure 1 shows the stages of review.

Quality Evaluation: Subsequently, the selected articles were critically analyzed by CD and GTM using the “CASP Checklist” (Critical Appraisal Skills Programme) tool, giving one point for each indication evaluated positively (with “yes”)⁹; the evaluation “Can’t tell” in the CASP is considered “No” in the CASP evaluation in Table 3.

Identification of studies via database

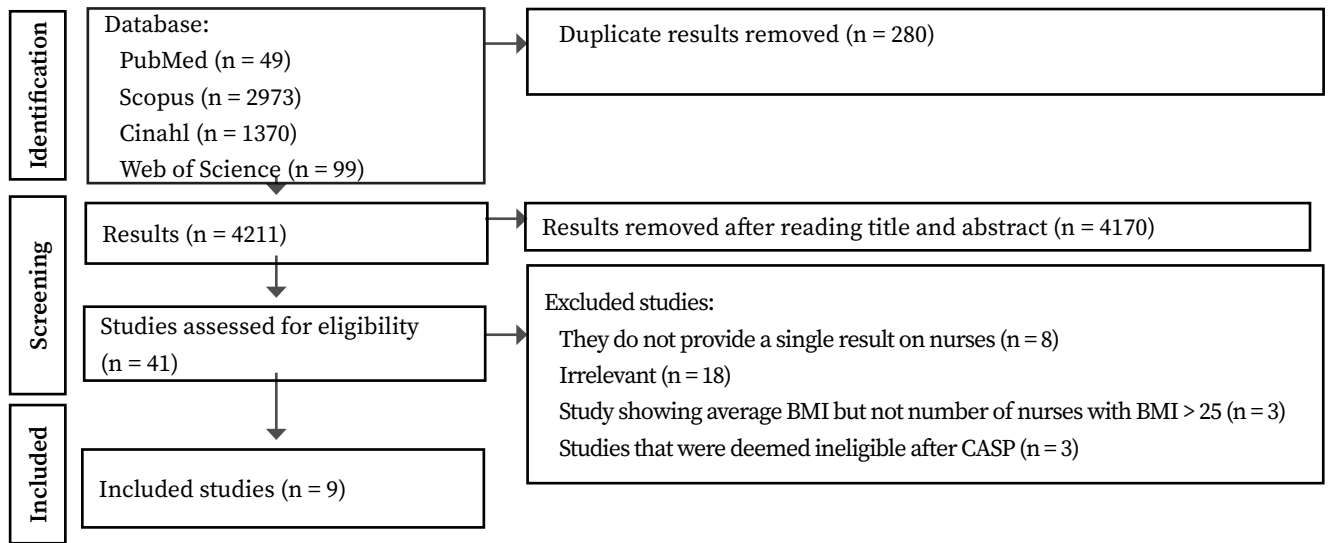


Figure 1: Diagram showing the review and selection process [10]

Results

Of the twelve selected studies, eight were included, as three did not exceed the minimum score necessary in the CASP guidelines¹¹⁻¹³. Five studies were cross-sectional, one was a prospective cohort study, two studies were case control. Table 3 reports the results.

D'Agostin et al. compared nurses and university employees, collecting data between February 2011 and January 2012, aiming to evaluate the presence of musculoskeletal pain; overweight and obese people were more among nurses (20.3% and 10.7% respectively, with a mean age of 42.3) than university employees (19.5% and 4.3%, mean age 38.7)¹⁴. Two studies by D'Ettore and colleagues were included. The first is a cross-sectional study where that investigates the correlation between shift work, BMI, and low back pain, in a group of nurses (630 considered, 210 in the study group and 420 in the control) who work in shifts¹⁵; the study group had a higher percentage of obesity (study group 35.2% overweight and 29.5% obese, while the control group respectively 38.6% and 16.7%). Another study by the same authors, on a different group of shift nurses (93 study group, 186 control) in medical and geriatric departments, with work-related low back pain, shows that in the group with low back pain, the total BMI is 25-29.99 (39,4%) and >30 (18,3%). Garzaro et al. evaluate the health status of nurses, comparing it with social, health, and medical workers: nurses with a BMI ≥ 25 were found in a lower percentage

than the workers' social health workers and greater than doctors¹⁷. Latina et al. studied the prevalence of low back pain and musculoskeletal pain among nurses in a Roman hospital¹⁸. Their results show that the total BMI is ≥ 30 .

Finally, four studies by Vitale were selected: the first study evaluates the variation in levels of insomnia, anxiety, and BMI during the Covid-19 pandemic among COVID-19 intensive care nurses throughout the Italian territory, sending the questionnaire via email from nursing platforms and forums and various social networks, evaluating the measurements before the pandemic and those following it¹⁹; the second study, with a sample recruited online, investigates the correlation between anxiety, depression, and stress with factors such as gender, work history, work shifts, and BMI²⁰; the last study evaluates whether there is a correlation between anxiety, insomnia, eating disorders and work in shifts during the Covid-19 pandemic, always sending the questionnaire by email from various social network platforms and forums without differentiating between the type of department (over 30 % have BMI >24.99)²¹. The same sample was investigated by the author for another publication, reporting the BMI of nurses²²: in order to avoid bias, we summarized only the first.

The range of nurses with BMI > 25 in the selected studies varies from 29.6% to over 62%; the values of each study are shown in Table 3.

First Author, Year of Publication and Purpose of the Study	Study Design and Methods	Participants and Randomization	Results	CASP Quality Assessment
D'Agostin e Negro (2017) ¹⁴ Comparison between nurses and university employees on musculoskeletal pain, examining the possible correlations between these and personal characteristics and radiologically evaluating the possible presence of musculoskeletal diseases	Cross-sectional comparative study, data collected from February 2011 to January 2012 Nurses working in departments with a MAPO index between 1.5-5	177 nurses (118 nurses e 59 auxiliary nurses)	BMI 25 - 29.99 36 (20.3%) BMI ≥30 19 (10.7%)	8/12
d'Ettorre et al (2018) ¹⁵ Analysis of the impact of shift work, individual physical activity and BMI on the incidence of acute low back pain and research into preventive interventions	Cross-sectional case-control study with questionnaire, research conducted between 01/11/2016 and 31/10/2017 Nurse with low back pain in acute and rehabilitation departments	210 nurses 420 control TOTAL 630	BMI 25 - 29.99 experimental 74 (35.2%) control 162 (38.6%) p value >0.05 BMI ≥30 experimental 62 (29.5%) control 70 (16.7%) p <0.05 Totale BMI > 25 Experimental 136 (64.7%) Control 232 (55.3%) TOTAL 368 (58.4%)	8/11
D'Ettorre et al (2019) ¹⁶ Analysis of the correlation between night shifts and prevalence of low back pain among nurses and evaluate organizational solutions	Cross-sectional Case control study, data collected between December 2017 and November 2018 Nurse with low back pain in medical and geriatric departments	93 nurses 186 control TOTAL 279	BMI 25-29.99 experimental 32 (34,4%) control 78 (41,9%) p value >0,05 BMI >30 experimental 27 (29%) control 24 (12,9%) p value <0.05 TOTAL BMI 25-29.99: 110 (39,4%) TOTAL BMI >30: 51 (18,3%)	8/11
Garzaro et al (2022) ¹⁷ Analysis of physical fitness and work quality among nurses and other healthcare professionals	Cross-sectional study with questionnaire, data collected in 2018 Not specified recruitment	73 nurses	BMI 25 - 29.99 14 (19.7%) BMI ≥30 7 (9.9%) TOTAL BMI > 25 21 (28.8%)	9/12
Latina et al (2020) ¹⁸ Evaluation of the prevalence of musculoskeletal pathologies and low back pain among nurses in a hospital	Cross-sectional study with questionnaire, data collected between January and March 2017 Nurses working in three areas: acute, sub-intensive and intensive	265 nurses	BMI 25 - 29.99 60 (23.4%) Obesity Cass I and II 30.0-39.9 15 (5.7%) Obesity Cass III >40.0 7 (2.7%) TOTAL BMI ≥30 22 (8.4 %)	8/12
Vitale (2021) ¹⁹ Survey on levels of anxiety and insomnia among nurses who worked in Covid-19 departments and evaluation of the difference in BMI before and after the first pandemic period	Prospective cross-sectional study, conducted from December 2019 (T0), and a subsequent reassessment performed from May to June 2020 (T1) Covid-19 intensive care nurses, recruited from online platforms	291 nurses	T0 BMI 25 - 29.99 107 (36.7 7%) BMI ≥30 10 (3.44%) T1 BMI 25 - 29.99 138 (47.42 %) BMI ≥30 43 (14.77%)	9/12
Vitale (2022) ²⁰ Analysis of the correlation between symptoms such as anxiety, depression and stress, and gender, work experience, shifts and BMI	Cross-sectional study with questionnaire, data collected in May 2022 Heterogeneous group recruited from online platforms	408 nurses	BMI 25 - 29.99 106 (26%) BMI ≥30 49 (12%)	8/12
Vitale (2022) ²¹ Survey on levels of anxiety, insomnia and eating disorders among nurses who worked in Covid-19 departments	Cross-sectional study with questionnaire, data collected in October 2020 Heterogeneous group recruited from online platforms	341 nurses Heterogeneous group recruited from online platforms	BMI 25 - 29.99 (88; 25.8%) BMI ≥30 (46; 13.6%)	7/12

Table 3: Summary of the selected studies

BMI Body Mass Index, BMI 25 - 29.99 Overweight, BMI ≥30 Obesity

Discussion

The range of the percentage of nurses with BMI ≥ 25 considered is notable in terms of breadth. Only six studies evaluated the association between BMI and health outcomes; the other studies investigated the data only for sample description purposes in each questionnaire, as single data, and considered it subsequently with respect to the object of investigation. In 3 studies more than 50% of the interviewees had a BMI ≥ 25 ^{15,16,19}, while in one less than 30%. The average BMI of the study population was below 25 in only one study, as it is the only study that indicates this data¹⁵, and only in one study was the BMI reported separately for males and females, with a higher percentage of nurses with BMI > 25 ¹⁹. Two studies, by the same first author, were performed only on nurses^{15,16}. Only one study indicates a comparison between BMI and age: BMI tends to increase with age, especially after the age of 35¹⁸. Comparing the results with the Passi surveillance report for the two years 2021-22 (32.6% of the population is overweight and 10.4% obese, with the total number of people with BMI ≥ 25 at 43.0%), overall a slight worsening was observed compared to 2011-14 (31.7% of overweight people and 10.2% of obese people), where the percentage of overweight and obese people combined is constantly growing and is lower than in the two years 2021-22, in only three studies the percentage of nurses with BMI > 25 it is higher than 43.0% (of which two study the phenomenon only in females). The same result occurs if we compare the selection with the data from the Osservasalute 2021 Report, which indicated the percentage of people with BMI ≥ 25 at 47.6%.

Vitale's comparative study could indicate a worrying fact: before the pandemic and the consequent Covid-19 lockdown, the number of people with BMI ≥ 25 among the nurses interviewed was lower than in the general population, while after the lockdown the data was significantly higher¹⁹; further surveys made subsequently by the same author give lower percentages in other study samples^{20,21}. However, these studies are based on samples in which the respondents responded voluntarily with an online questionnaire¹⁹⁻²¹.

The problems of being overweight are known: a BMI ≥ 25 is a risk factor for low back pain and musculoskeletal pathologies^{14-16,18,23,24}, especially if it is associated with night shift work^{12,15,25}. Having an increasingly older working population

can lead to greater limitations¹⁷, in addition to the fact that those who are obese are subject to a shorter average lifespan^{24,26-32} and to a greater risk of incurring infectious diseases such as Covid-19¹⁹, metabolic pathologies such as diabetes^{24,30,31}, cardiovascular pathologies^{24,27,30}, anxiety³³⁻³⁵, stress symptoms^{36,37} and depression^{20,35,38,39}. Overweight nurses have a higher incidence of absenteeism from work^{21,40-42}. Comparing the results with studies before the inclusion criteria of this systematic review, in 2006, in Messina, Abbate et al. found 38.9% of all healthcare workers (including nurses) were obese or overweight⁴³. Nevertheless, in 2013, Faggiano et al. studied 1763 cardiologists and found a prevalence of 38.4% of overweight people and a 7.2% prevalence of obese people⁴⁴; in 2018 in the Senese University Hospital, Lazzeri et al.⁴⁵ found 35.0% of people with BMI > 25 in their study sample⁴⁵. These data are much closer to population data than to individual nurse data, and this could be seen as a wake-up call for all healthcare professionals.

Healthy lifestyles should be promoted by healthcare companies to their employees: training courses and agreements must be agreed with dietitians, nutritionists, and kinesiologists^{46,47}. Physical activity with reduced prices for healthcare workers can improve adherence to a better lifestyle¹⁶, and literature shows improvements for health care workers that improve physical activity⁴⁸. Furthermore, a handbook for staff coming from outside the area on the clubs and sports clubs where they can carry out activities may be useful. The WHO has given guidelines relating to physical activity for adults: 150 minutes of vigorous and moderate activity, with at least one strength training per week, to have a beneficial impact on one's health⁴⁹.

Limitations

The limitations of this study are represented by the selection of samples of considerable heterogeneity, in some cases without accurate sampling, and with the possibility of bias. The use of international databases and the lack of gray literature may have drastically reduced the selectable studies. The prevalence estimation cannot be accurate as this work lacks pooling of the sample and meta-analysis. Therefore, further studies and a more representative sample of the population under study would be necessary, and this work can have a future development

becoming a meta-analysis. Finally, as regards the comparison between nurses and the population, the available samples were extremely different in terms of size.

Conclusions

It is important to seek a BMI reduction policy for nurses since the nursing population runs the risk of incurring conditions of overweight and obesity. The regional and national political class could increase resources to improve physical activity, and, generally, lifestyle for nurses and other healthcare workers. However, it seems that, compared to the Italian population, it has better and more encouraging behaviors, in terms of weight maintenance.

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