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Original Article

Attitudes of Health Care Professionals towards Female Obese Patients

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Key Words

Health care professionals · Obesity · Care · Stigma

Abstract

Objective: The health care setting has been reported to be one main source of weight stigma repeatedly; however, studies comparing different professions have been lacking. **Methods:** 682 health care professionals (HCP) of a large German university hospital were asked to fill out a questionnaire on stigmatizing attitudes, perceived causes of obesity, and work-related impact of obesity. Stigmatizing attitudes were assessed on the Fat Phobia Scale (FPS) based on a vignette describing a female obese patient. **Results:** Only 25% graded current health care of obese patients to be 'good' or 'very good'. 63% of all HCPs 'somewhat' or 'strongly' agreed that it was often difficult to get the resources needed in order to care for obese patients. The mean FPS score was comparable to that in the general public (M = 3.59), while nursing staff showed slightly more positive attitudes compared to physicians and therapists. Higher age, higher BMI, and ascribing personal responsibility for obesity to the individual were associated with a higher level of stigmatizing attitudes. The nursing staff agreed on obesity as an illness to a greater extent while physicians attributed obesity to the individual. **Conclusions:** In summary, by making complex models on the causes of obesity known among health care professionals, stigmatizing attitudes might be reduced. Ongoing further education for health care professionals ought to be part of anti-stigma campaigns in the medical field.

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Introduction

Obesity, defined as a BMI of over 30 kg/m², is highly prevalent in industrialized countries, affecting up to 600 million people worldwide [1]. With prevalence rates up to 35% (e.g. in the USA), health care providers are inevitably faced with the condition, which might soon affect the majority of their patients. Obviously, optimizing care for obese patients poses a great challenge for the players in the health care systems. Even in specialized facilities, resources for adequate care, e.g. size-appropriate gowns, stretchers, scales and diagnostic facilities, are not sufficient in some areas [2], and it must be assumed that general hospitals and practices are even less well equipped. These 'logistical dilemmas' could be overcome by a variety of additional equipment [3] and would contribute to facilitate care for the providers.

Other issues, however, remain. Obesity is associated with numerous negative health outcomes and also limits treatment success in certain conditions [4]. The treatment of obese patients for any condition is therefore linked to much greater risks of negative outcomes compared to normal-weight patients. The experience that weight loss attempts are often unsuccessful may further contribute to the impression that obese patients are more difficult to treat [5].

These factors, the lack of sufficient utilities for care, and perceived and feared complications in the treatment of obese patients might promote negative views of health care professionals on their obese patients. The health care setting has repeatedly been reported as one major source of weight stigma [6, 7]. A current qualitative synthesis suggests that stigmatizing attitudes among providers are reflected by patients reporting stigmatizing events in health care [8]. Perceived stigma can be considered a threat to optimized health care. Several studies have proposed that obese individuals hesitate to undergo necessary examination and screening procedures due to expected stigmatization. This has especially been reported among women throughout different areas of health care [9].

Past research on stigmatizing attitudes among health care professionals, however, has been limited mainly to studies from Anglophone countries, such as the USA [7]. In Europe, only a French study among general practitioners documents stigmatizing attitudes towards the obese to be highly prevalent [10]. In line with these previous findings showing country-related and even culture-related differences in stigmatizing attitudes, this study expands the knowledge in this field of research. It provides data from a large sample of health care professionals in Germany. Furthermore, previous research has mainly been conducted in homogeneous samples by only investigating one group of professionals. This study allows for a direct comparison of stigmatizing attitudes among different groups of health care professionals and their work settings. For one, this study sets out to identify professions that may be more prone to weight stigma. While research in this area is lacking, it is possible that the degree of physical contact as well as the necessity to overcome the mentioned logistic dilemmas by certain professions may influence weight stigma and rejection of obese patients. Especially nursing staff may be affected profoundly by these factors. It is therefore hypothesized that nurses show an elevated level of stigmatizing attitudes towards obese patients. In order to explore this hypothesis, work-related factors (such as difficulty in equipment access) are investigated. Additionally, determining factors of weight stigma may differ between different professions. Aside from work-related factors, causal attributions, which have been identified as one variable linked to stigma in obesity [11], may differ due to differences in job training. For example, it could be expected that physicians have a more in depth understanding of the causes of obesity and therefore display fewer stigmatizing attitudes. This information can be utilized in following anti-stigma campaigns. By directly comparing professions, more targeted intervention can be planned and conducted.

Material and Methods

Sample

Data collection was realized from May to October 2011 at the Leipzig University Medical Center in Germany. The study team introduced the study at team meetings of all clinics and handed out the questionnaires that were accompanied by return envelopes. In each meeting, additional questionnaires were left for those team members that were not attending (e.g. due to shifts). A total of 1,739 questionnaires were passed out that way. Of those, 682 were returned, yielding in a response rate of 39%.

Ethical Statement

The trial protocol has been approved by an ethical committee and thus meets the standards of the Declaration of Helsinki. Participants were informed about the purpose of the study within the questionnaire. By filling out and returning the questionnaire, informed consent was assumed.

Vignette-Driven Approach

Concordantly with commonly used methods in stigma research, experimental manipulation was realized by vignettes. A methodological review recently suggested use of vignettes and following rating scales in order to overcome biased self-report [12]. In previous studies, vignettes have been used to induce vivid pictures of the depicted individuals, especially in the field of mental health research [13, 14] and attribution theory [15]. The vignette displayed in the questionnaire was a 42-year-old woman. This study focuses on attitudes towards obese middle-aged women that might be most prone for stigmatization in general [16].

By mentioning her height and weight, it was indicated that she was obese (BMI = 32 kg/m²) which was further emphasized by the clause 'and is therefore obese'. At the end of the questionnaire the vignette was repeatedly introduced; this time, however, at a different weight and the addition 'and is therefore of normal-weight'. Each vignette was followed by the assessment of stigmatizing attitudes.

Stigmatizing Attitudes

The short form of the Fat Phobia Scale (FPS) by Bacon et al. [17] was used to assess stigmatizing attitudes. The short version of the original instrument was derived from factor analysis, representing a factor that describes negative attitudes and showed high correlation with the original long form. The scale consists of 14 pairs of adjectives on a semantic differential. The interviewer introduced the scale as looking like a ruler with opposing adjectives on each side. The respondent was then asked where on this ruler he/she would rate the vignette on a scale from 1 to 5. A mean FPS score was calculated, with higher scores indicating higher negative attribution. Participants with more than 5 missing values were excluded. In previous research, the mean FPS score was categorized (e.g. [18]). According to the authors, a score of below 2.5 indicates neutral attitudes towards the described person, while a score of 2.5 or higher reflects a higher level of negative attitudes. As a reference category, a mean FPS score was also calculated for the normal-weight vignette.

Causal Attribution

14 items on the causes of obesity were presented without further explanation based on previous research and focus groups [19]. Respondents were asked to rate importance of each potential cause of obesity for the vignette on a scale from 1 = 'not important at all' to 5 = 'highly important'. Factor analysis of all items suggested a four-factor solution (Kaiser criterion of Eigenvalues > 1). Items loading on factor 1 can be summarized as external factors (e.g. food and social environment), while factor 2 relates to variables regarding food intake and energy expenditure. Factor 3 consisted of items that were summarized as seeing obesity as an illness-like condition (e.g. genetic and metabolic causes). 'Lack of willpower' represented an own factor itself, here termed as the cause of obesity lying within the individual's responsibility (factor 4).

Other Measures

Age, gender, weight, and height of all respondents were assessed. The BMI was then calculated based on the self-report data [20]. Work-related variables included experience in years, profession, and field of profession. In the variable of profession, different categories were presented (physicians, nursing staff, therapists (psychotherapist, dietitians), and a group of other employees (technical staff, interns)). Additionally, different aspects of quality of care were assessed. On a grading system from 1 (excellent) to 6 (fail), participants were asked to rate current health care for obese patients. On 5-point Likert scales they were asked to rate to what extent they had trouble accessing appropriate resources (such as stretchers) and to what extent

they felt limited in providing care due to the patient's excess weight. Furthermore, the respondents were asked to state whether health care for obese patients was harder, the same, or easier compared to normal-weight patients.

Data Analyses

All analyses were conducted using STATA 12 [21]. A one-way ANOVA with post-hoc Scheffé tests was conducted to examine mean differences of the professions under investigation. To do so, four categories (physicians, nurses, therapists, and others) were established. Psychotherapists and occupational therapists were collapsed into the group of general therapists. This variable was dummy-coded and later used in the regression model.

Differences between FPS items of the normal-weight and obese vignette were assessed with t-tests. A standardized difference was calculated in form of an effect size. According to Cohen [22], effect sizes of $d = 0.2$ are considered small, while $d = 0.5$ represents a moderate effect, and $d = 0.8$ is regarded a large effect.

Linear regression models were used in order to determine variables associated with stigmatizing attitudes. In regression analysis, a continuous mean score served as the dependent variable. For each of the factors found on perceived causes of obesity, a mean factor score was calculated and introduced. Independent variables were selected from the questionnaires to cover work-related and causal factors. They were then introduced to the model simultaneously. Age, BMI, and work experience in years were introduced as continuous variables. Difficulty in equipment access was treated as a quasi-metrical variable ranging from 1 to 5 (= more perceived difficulty). The same is true for the perceived responsibility for a solution of the obesity problem (5 = solution is societal responsibility). The four factors of causal attribution were introduced as mean factor scores.

For a detailed overview, three multi-variate regression analyses were conducted. Firstly, it was investigated whether profession group differences would persist when controlling for work-related and causal factors. In a second step, two subgroup analyses were carried out. Associated variables were examined in the physicians' and the nurses' subsamples. Case numbers did not allow for analysis of the other two profession groups.

Results

Table 1 summarizes relevant characteristics of the sample. About three quarters of the sample were female with a mean age of 35.86 years (standard deviation (SD) = 10.82). The prevalence of overweight was 17.5%, while 5.4% of the sample was obese. The majority of the sample consisted of nurses. An imbalance in energy intake and expenditure was seen as the most important cause of obesity, followed by biomedical reasons. About 30% of the sample agreed that genetic influences were 'relevant' or 'very relevant' in the development of obesity. External reasons for obesity, such as an obesogenic environment, were seen less relevant. Almost 20% of all respondents viewed this cause as 'relevant' or 'very relevant'. The mean FPS score was at 3.59 (SD = 0.50), with a possible range from 1 to 5.

The overwhelming majority of the respondents stated that they felt that the provision of health care in obese individuals was more difficult than in normal-weight patients. Only a quarter of the sample graded current health care of obese patients to be 'good' or 'very good'. 63% of all health care professionals 'somewhat' or 'strongly' agreed that it was often difficult to get the resources needed in order to care for obese patients.

All individual items of the FPS and their mean scores are displayed in table 2. For each adjective pair, the overweight woman was rated more negative than the normal-weight woman. Food-related pairs received the highest scores, while effect sizes were largest regarding activity items. Effect sizes were moderate to large.

When FPS scores were categorized as described in the methods section, more than 99% of all respondents were classified as describing negative attributes towards the depicted obese woman. The mean FPS scores of the normal-weight and obese vignette differed signif-

Table 1. Sample characteristics
(n = 682)

	Frequencies/means
Gender, female, n (%)	498 (74.9)
Age, mean (SD)	35.9 (10.8)
BMI, mean (SD)	23.36 (3.79)
Underweight, n (%)	22 (3.7)
Normal-weight, n (%)	431 (73.3)
Overweight, n (%)	103 (17.5)
Obese, n (%)	32 (5.4)
Stigmatizing attitudes, mean (SD)	3.59 (0.50)
Profession	
Physician	183 (28.4)
Nursing	321 (49.8)
Therapists ^a	118 (18.3)
Other	23 (3.6)
Attribution of causes ^b	
Environmental influence, mean (SD)	3.08 (0.87)
Balance of energy intake, mean (SD)	4.03 (0.92)
Biomedical causes, mean (SD)	3.54 (1.07)
Personal responsibility, mean (SD)	3.21 (0.83)
Please grade current health care for obese patients: good/very good, n (%)	133 (23.4)
Health care for obese patients is ...	
... more difficult, n (%)	588 (95.6)
... the same, n (%)	27 (4.4)
I feel affected by the patients' weight when caring for them: somewhat agree/fully agree, n (%)	347 (56.8)
Often I do not know where to get equipment or personnel in order to care for an obese patient: somewhat agree/fully agree, n (%)	372 (63.3)

^aPhysiotherapists, psychotherapists, occupational therapists.
^bRanging from 1 to 5, higher scores reflect higher agreement of relevance of causes.

icantly ($t = 32.9384$, $p < 0.001$). Differences in the amount of stigmatizing attitudes among the professions under investigation are shown in table 3. Compared to physicians, therapists and other medical staff, nurses had significantly lower FPS scores ($F(3,680) = 4.22$, $p = 0.006$), indicating a more positive view of the obese patients that were depicted in the vignettes. All other comparisons did not differ significantly. When looking at the categorization of the FPS score, proportional fewer nurses were above the cut-point of 2.5 ($\chi^2 = 3.6273$, $p = 0.05$).

In the multi-variate regression model (whole sample), higher age was associated to a higher level of stigmatizing attitudes ($\beta = 0.014$, $p < 0.05$). Respondents with more work experience displayed less negative views towards the obese individual ($\beta = -0.013$, $p < 0.05$) than less experienced health care professionals. While environmental factors and energy intake variables did not influence the level of stigmatizing attitudes, regarding obesity as a condition due to biomedical causes was associated with a more positive view of the vignette ($\beta = -0.069$, $p < 0.01$). Ascribing personal responsibility to the individual led to higher stigmatizing attitudes towards the obese vignette ($\beta = 0.087$, $p < 0.001$). Lastly, seeing the solution of the obesity problem more on a societal side was associated with lower stigmatizing attitudes ($\beta = -0.007$, $p < 0.05$). The proportion of explained variance in the model was 28%.

Table 2. Mean for each adjective pair (n = 627)^a

Pair of adjectives	Normal-weight vignette		Overweight vignette		p	ES
	mean	SD	mean	SD		
Industrious ... lazy	2.58	0.64	2.95	0.69	<0.001	0.56
Has willpower ... no willpower	2.53	0.69	3.47	0.76	<0.001	1.30
Attractive ... unattractive	2.38	0.84	3.57	0.94	<0.001	1.34
Good self-control ... poor self-control	2.64	0.73	3.29	0.83	<0.001	1.79
Fast ... slow	2.36	0.78	3.79	0.82	<0.001	1.72
Having endurance ... having no endurance	2.30	0.82	3.80	0.93	<0.001	1.68
Active ... inactive	2.26	0.82	3.68	0.87	<0.001	0.88
Strong ... weak	2.70	0.68	3.35	0.79	<0.001	0.88
Self-sacrificing ... self-indulgent	2.66	0.68	3.43	0.74	<0.001	1.08
Disliked food ... likes food	3.21	0.62	4.10	0.87	<0.001	1.18
Shapely ... shapeless	2.21	0.79	3.71	1.03	<0.001	1.63
Undereats ... overeats	2.93	0.37	4.12	0.92	<0.001	1.70
Secure ... insecure	2.48	0.73	3.58	0.84	<0.001	1.40
High self-esteem ... low-self-esteem	2.52	0.73	3.55	0.80	<0.001	1.35

ES = Effect size.

^a*Instruction:* Please imagine a 42-year-old woman. She is employed. At a body height of 1.68m, she weighs 62/90 kg and therefore has to be considered normal-weight/obese. From 1 'Industrious' to 5 'Lazy' how would you describe that woman?

Table 3. ANOVA post-hoc Scheffé tests, mean differences and p values

	Physicians	Nurses	Therapists
Nurses	-0.144*		
	0.019		
Therapists	-0.051	0.0931	
	0.836	0.325	
Others	0.066	0.2101	0.1170
	0.948	0.285	0.780

*p < 0.05

Subgroup Analyses

Table 4 also reports results for the physicians' and nurses' subsamples, and further enlightens differences between the two professions. Physicians not only emphasize personal responsibility of obese patients (ANOVA, data not shown, $F(3,667) = 16.90$, $p < 0.001$), but this association remains significant when controlling for other confounding variables ($\beta = 0.076$, $p < 0.05$). Nurses on the other side agree on biomedical causes of obesity to a stronger extent ($F(3,687) = 2.93$, $p = 0.035$), which is associated with lower stigmatizing attitudes ($\beta = -0.097$, $p = 0.023$). More experience in the field was associated with lower stigmatizing attitudes ($\beta = -0.023$, $p < 0.05$).

Table 4. Adjusted^a associations of stigmatizing attitudes of health care professionals and sub-groups towards overweight

	Full sample			Physicians			Nurses		
	coefficient	95% CI	p	coefficient	95% CI	p	coefficient	95% CI	p
Sociodemographics									
Female sex	-0.0489	-0.1501 to 0.0526	0.345	0.0001	-0.1207 to 0.1210	0.998	-0.170	-0.427 to 0.0875	0.194
Age	0.0139*	0.0032 to 0.0243	0.011	0.0067	-0.0098 to 0.0232	0.421	0.0278**	0.0080 to 0.4757	0.006
BMI	-0.0083	-0.0192 to 0.0024	0.129	-0.0122	-0.0316 to 0.0071	0.215	-0.0101	-0.0252 to 0.0050	0.187
Work-related variables									
Profession (ref = physician)				n/a			n/a		
Nurses	-0.0874	-0.2157 to 0.0409	0.181						
Therapists	0.0090	-0.1167 to 0.1344	0.889						
Others	0.0037	-0.2123 to 0.2197	0.3973						
Difficulty equipment access	0.0206	-0.0124 to 0.0536	0.220	0.1890	-0.0301 to 0.0681	0.446	-0.0074	-0.0650 to 0.0503	0.801
Difficulty in health care (ref = more difficult)	-0.0610	-0.3128 to 0.1907	0.634	0.1070	-0.3739 to 0.5876	0.661	-0.0748	-0.4690 to 0.3193	0.708
Experience in years	-0.0132*	-0.0240 to 0.0250	0.016	-0.0095	-0.0270 to 0.0081	0.290	-0.0236*	-0.0430 to -0.0042	0.018
Attribution of causes									
Environmental influence	-0.0229	-0.0737 to 0.0280	0.377	-0.0106	-0.0918 to 0.0705	0.796	0.0066	-0.0753 to 0.0885	0.874
Biomedical causes	-0.0686**	-0.1209 to -0.0163	0.010	0.0038	-0.0782 to 0.0858	0.927	-0.097*	-0.1852 to -0.0142	0.023
Balance of energy intake	0.0141	-0.0402 to 0.0684	0.610	-0.0132	-0.0840 to 0.0575	0.712	0.0413	-0.0554 to 0.1381	0.400
Personal responsibility	0.0870***	0.0461 to 0.1280	<0.001	0.0764*	0.0159 to 0.0137	0.014	0.0574	-0.133 to 0.1280	0.111
Other variables									
Solution rather responsibility of society	-0.0070*	-0.0137 to -0.0003	0.039	-0.0752 [†]	-0.1611 to 0.0105	0.085	-0.0078	-0.0184 to 0.0028	0.147
Constant	4.7439***	4.1715 to 5.3163	<0.001	4.7153***	3.7177 to 5.7129	<0.001	4.8028***	3.9203 to 5.6853	<0.001
Adjusted r ²	0.284			0.232			0.322		
n	430			157			187		

CI = Confidence interval; n/a = not applicable. [†]p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. ^aAdjusted for FPS normal-weight vignette.

Discussion

Studies, mainly conducted in the USA, have identified health care professionals as an important source of weight-related stigma [23]. Data from Germany, however, are lacking. The aim of the present study was therefore to investigate health care professionals' attitudes towards overweight and obesity in Germany. Different groups of health care professionals were compared. This comparison is crucial in order to identify relevant target groups for anti-stigma campaigns. Furthermore, views on obesity care were described.

The mean FPS score of 3.59 corresponds to the score reported from the English version of the scale (3.6 in a general sample from 1999) and indicates a moderate level of stigmatizing attitudes [17]. The described classification using a cut-off score of 2.5 reflects that almost the whole sample displayed moderate to high negative attitudes towards the obese patient. On all adjective pairs, the overweight women was rated more towards the negative adjective on the scale. Also, the answer distribution patterns for the overweight vignette were identical with those found in the general population [11]. 99.0% of all respondents there displayed negative attitudes towards the obese woman depicted in the vignette. The health care professionals in our sample therefore judge the overweight women based on negative adjectives just as often as the general population [11].

Previous studies found comparable negative attribution. Among general practitioners, about one third agreed that obese people were lazier than their normal-weight counterparts [10, 24, 25]. Also, they were described as being less will-powered by about the same proportion of respondents [10, 25]. In our sample, however, the mean attribution to 'lazy' was less pronounced compared to the other adjective pairs. While the issue of reduced willpower still seems relevant, factors associated with a healthy, fit lifestyle seem to have gained relevance. Obviously, even in the general public, a 'fear of fat', e.g. the concern to gain weight and lose attractiveness and quality of life, has been established [26], and this might be true among health care professionals in Germany as well. Describing obese women as unattractive, slow, and inactive contradicts the societal ideal of an individual just as obesity contradicts the society's ideal body shape. This link might be even of more relevance in women than in men as the ideal body shape for women is a frequently discussed topic in the media and within Western societies [27]. As this study explicitly described an obese woman, this may be the reason for finding more body shape-related weight bias. Likewise, more psychological factors concerning self-esteem were found to be attributed negatively towards the obese woman. For women, higher body dissatisfaction has been reported [28] which might be seen as an indicator for general low self-esteem. On the other hand, psychological factors were seen as 'important' or 'extremely important' by over half of the respondents. This relative importance of psychological causes of obesity might have led to a perceived relevance of psychological constructs within the adjectives as well.

Nursing staff believed less negative of the obese woman compared to other professions. This finding seems quite unexpected since it was assumed that health care professionals working directly ('hands on') with obese patients would be more affected by the obstacles in care that excessive body weight poses. It is possible that the therapists' and physicians' work does not require as much physical contact to obese individuals and patients to the amount that nurses are faced with. This pattern, however, has been reported before where it was concluded that the actual experience of caring for obese people does indeed reduce bias [29]. Furthermore, one previous study was able to even show positive attitudes of nurses toward obese patients, which are associated with a concern to providing nonbiased health care [30].

Post-hoc analyses in our sample regarding the emotional response to obese patients revealed items on anger ('I am annoyed by the additional burden that obese patients mean for me') for the nursing subsample. Obviously, the additional burden is most challenging for

professions that work directly with their obese patients. Two pathways of reasoning are possible: For one, these results may be an indicator that the lack of adequate treatment facilities can cause health care professionals to display higher stigmatizing attitudes. Reducing the additional hassle for them might therefore affect stigmatizing attitudes. On the other hand, health care professionals may feel annoyed at their obese patients because of their biased views. Factors associated with those, namely an association to causal beliefs, were found in the current study.

In fact, attribution theory implies that perceiving a condition to be under individual control is the basis for stigmatizing attitudes [31]. Based on the medical knowledge that health care professionals ought to have regarding the multi-faceted causes of obesity, one could expect lower stigmatizing attitudes compared to the general public. In this study, factors of causation of obesity showed to be significantly associated with the overall amount of stigmatizing attitudes as well. It is therefore in line with that assumption that seeing biological reasons for obesity as relevant was associated with lower stigmatizing attitudes. On the contrary, attributing obesity to personal responsibility and personality traits has been shown to be associated with higher stigmatizing attitudes in the past [32], and factors within the obese individuals are perceived as the main causes of obesity in the general public [19]. This study demonstrates that the knowledge on causes of obesity is very limited even among health care professional samples. While 30% see genetic causes as 'very or extremely relevant', to most respondents it is a problem of energy balance. External factors such as the social environment and the plenteousness of food play an inferior role in the eyes of health care professionals. As shown in previous studies, this biased view on the causes of obesity might in part be due to a lack of motivation to invest in ongoing education. For example, a study among French general practitioners showed that negative attitudes were most common among practitioners that read less scientific books and journals [10].

This finding underlines the need for the explicit implementation of complex models of the etiology of obesity. Re-educating health care professionals and enforcing an ongoing curriculum dealing with the causes of obesity and its treatment options seems necessary in order to overcome the negative view of health care professionals. For example, learning about first-hand experiences from affected individuals may also further reduce negative views of obese patients.

The ascription of obesity solely to individual control does not only lead to higher stigmatizing attitudes that patients are confronted with, but may also determine weight counseling behavior of health care professionals. Negative attitudes have shown to be a barrier to weight counseling in general [5, 33, 34]. Additionally, when health care professionals see the causes of obesity within the individual and its energy expenditure, they may be more likely to recommend lifestyle-based obesity treatment. These single-centered approaches, however, have shown to be moderately effective at the most [5, 35], and their application might only lead to unsuccessful and potentially harmful weight loss reduction efforts [36] that do not take into account the individual causes of obesity within the patient. A model investigated the individual's obesity causes has been introduced [37], and its distribution and implementation in the health care setting seems most relevant.

Other factors that were associated with the amount of stigmatizing attitudes related to sociodemographic (age, BMI) and work-related (work experience) variables. Schwartz and colleagues [29] also found BMI and directly working with obese patients to be associated with lower amounts of negative attribution – a finding that is known from psychiatric stigma research where contact with, e.g., individuals suffering from schizophrenia reduces stigma as well [38]. As stated before, actual contact with obese individuals may reduce bias [29]; a fact supported by previous research showing that greater work experience was associated with lower stigmatizing attitudes in a sample of nurses [39]. Older age has also been found to be

predictive of stigmatizing attitudes in other samples [32]. It has been argued that older people are at a higher risk of obesity and therefore regard it as a greater threat which is reflected in more negative views towards the obese. The body of research on determinants of stigmatizing attitudes, however, is rather small and further investigation needs to be done.

Limitations

The response rate of the present sample was satisfactory, but could not be controlled for systematic bias. Passing out questionnaires within the work setting always holds the risk of low response rates, as the staff may not find time to fill out the questionnaire. The response rate of 39%, however, is comparable to those in other German samples of medical staff [40, 41]. Furthermore, a post-hoc power analysis revealed a power of 96.8%.

Conclusions

The implementation of a comprehensive etiological model of obesity among health care professionals seems urgently needed. By making complex models on the causes of obesity known among health care professionals, stigmatizing attitudes might be reduced. This may be realized by focusing continuing education on obesity and its causes. As most health care professionals are obliged to undergo a certain amount of ongoing training each year, offering a special curriculum on obesity may be a way to reach a substantial amount of health care providers. Additionally, it seems that anti-stigma campaigning ought to focus on less experienced health care professionals as they might be most prone for stigmatizing attitudes. It seems a central issue that health care professionals have access to adequate equipment in order to provide optimal care for obese individuals.

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Disclosure Statement

All authors declare no conflict of interest.

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