ORIGINAL ARTICLE

Designing A Training Needs Model Related to Obesity for Primary Care Nurses in Health Clinics, Pahang

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ABSTRACT

Background: Primary care nurses are crucial in preventing adult obesity through the delivery of impactful health education on obesity-related issues. This study aimed to develop a training needs model for primary care nurses in Malaysia to address the increasing obesity epidemic. **Methods:** A cross-sectional study using a questionnaire adopted from Bucher Della Torre et al. and translated to the Malay version was distributed to 234 primary care nurses in Pahang. A training needs model was designed from the findings using Partial Least Square-Structure Equation Modelling (PLS-SEM). **Results:** Nurses had a moderate level of knowledge (M=5.56, SD=1.98), attitudes (M=3.26, SD=0.29), and strong belief (M=4.43, SD=0.62) towards obesity management. While a positive perception (M=4.31, SD=0.75) towards intervention opportunities, a high level of engagement (M=8.24, SD = 2.88), in obesity management practices. There are significant associations between the practice of managing obesity with attitude ($r = 0.17$, $p = 0.009$), belief ($r = 0.46$, $p < 0.001$) and opportunity ($r = 0.57$, $p < 0.001$) to address obesity. Correlation analyses indicated that, while knowledge alone did not significantly influence practises, engagement was positively associated with nurses' positive attitudes, strong beliefs, and perceived opportunities regarding obesity management. Structural equation modelling confirmed these findings, indicating that knowledge, attitudes, beliefs, and opportunities accounted for 57.0 % of practise variance, implying the presence of additional potentially influential factors. **Conclusion:** Through a comprehensive training needs model, key areas are identified for improvement in nurses' knowledge, attitudes, beliefs, opportunities, and practices related to obesity management. The findings highlight the importance of targeted training programmes and continuing education initiatives to address knowledge gaps and enhance nurses' competency in obesity management.

Malaysian Journal of Medicine and Health Sciences (2025) 21(SUPP6):137-142. doi:10.47836/mjmhs.21.s6.24

Keywords: Training needs model, obesity, primary care nurse (2 more keywords)

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INTRODUCTION

The worldwide prevalence of obesity had increased nearly tripled between 1975 and 2016 while more than 1.9 billion adults aged 18 years and older were overweight (1). Despite concerted efforts such as continuous nursing education, conferences, seminars, and workshops, the prevalence of obesity in Malaysia remains alarmingly high, as evidenced by the National Health and Morbidity Survey of Malaysia (NHMS) 2019, which revealed that 50.1% of adults are either overweight (30.4%) or obese (19.7%) with the trends continuing to rise (2). This persistent rise in obesity rates suggests that the current approaches to obesity-related training for primary care nurses may be inadequate in addressing the multifaceted challenges of obesity management. Obesity is a complex and multifactorial condition influenced by various factors, including physical inactivity, unhealthy dietary habits, socioeconomic conditions, and genetic factors (3). Furthermore, obesity

is closely linked to the increase in non-communicable diseases (NCDs) such as type II diabetes, hypertension, cardiovascular disease and renal failure resulting in substantial excess healthcare costs (4). Addressing obesity requires a comprehensive understanding of these interrelated factors and the implementation of evidence-based interventions tailored to the individual needs of patients. However, healthcare professionals, including primary care nurses, may face several challenges in effectively managing obesity. Limited access to specialised services, cultural and language barriers, stigma and bias, and barriers to patient engagement and adherence are among the identified challenges (5). Additionally, the evolving nature of healthcare practices and the continuous emergence of new research findings necessitate ongoing education to keep pace with evolving best practices in obesity management. Primary healthcare nurses play a major role in helping to reduce the number of Malaysian citizens with obesity, as part of their interventions to lower the occurrence of non-communicable diseases in Malaysia (6). Despite efforts such as continuous nursing education, conferences, seminars, and workshops, healthcare professionals may still lack the necessary knowledge, skills, and resources to address the complex and multifaceted nature of obesity effectively. Thus, there is a pressing need to reevaluate and enhance existing training methods for primary care nurses to ensure that they are adequately equipped to address the rising prevalence of obesity and its associated health implications. Therefore, this study aimed to develop a training needs model for primary care nurses towards the management of obesity.

MATERIALS AND METHODS

A cross-sectional study was conducted at primary health clinics in Pahang from October 2021 to April 2022 with approval from Kulliyyah of Nursing Postgraduate and Research Committee (IIUM/313/DDPG&R/C/20/4/10) and Medical Research and Ethics Committee (MREC) (NMRR-21-981-58196 (IIR)) among 262 registered nurses working in the selected primary health clinics. The selection of primary health clinics was based on a stratified random sampling technique. Pahang was divided into geographical regions, and primary health clinics were randomly selected from each region to ensure geographic representation. Additionally, efforts were made to include clinics serving diverse populations in terms of urban and rural settings, socioeconomic status, and healthcare utilisation patterns, thus enhancing the representativeness of the sample. Informed consent was taken from all participants and the confidentiality of their details was reassured. Participants were asked to complete a set of self-administered questionnaires, adopted from Bucher Della Torre et al. (7) including, i) socio-demographic data ii) knowledge iii) attitudes iv) practices v) beliefs about the disease and vi) opportunity and perceived needs. Demographic data was obtained including age, working experiences, current height and weight, and body mass index (BMI). There were 9 multiple-choice questions included to assess the nurse's knowledge level aimed to evaluate participants' awareness of the definitions, recommendations and messages used and disseminated in the hospital. Each correct answer scored as 1 point and wrong answer scored as 0. Questions on knowledge aimed to evaluate participants' awareness of calculating BMI, healthy balanced diet and lifestyles. For attitudes towards obesity in Part C, there are 15 questions with a Likert scale were distributed to measure nurses' attitudes. Lower scores on the Likert scale indicate a more negative attitude towards the management of obese patients. Part D of the questionnaire measured the practice of giving health education concerning healthy behaviour. The score for option "Yes = 1" or "No = 0" for the activities carried out towards obese patients. There are 10 activities related to care for patients with obesity. Lower scores indicate a lack of practice in giving health education to the patients. In Part E, 8 questionnaires using the Likert scale for beliefs about obesity is used. Lower scores on the Likert scale indicate a low belief about disease and causes of obesity. In the last part, 4 questionnaires using the Likert scale related to perceived opportunities to discuss with patients regarding obesity problems. Lower scores on the Likert scale indicate a low opportunity for discussion.

Inferential statistics, including correlation analysis and multiple regression analysis, were employed to determine the relationships between knowledge, attitude, belief, and opportunity with practice among primary care nurses. Correlation analysis assessed the strength and direction of the relationships between variables, while multiple regression analysis examined the extent to which knowledge, attitude, belief, and opportunity predict practice outcomes. These statistical techniques allowed for the identification of significant predictors and the estimation of their respective effects on nurses' practices related to obesity management.

Partial Least Square-Structure Equation Modeling (PLS-SEM) was chosen as the primary analytical approach due to its suitability for handling complex models with latent variables and observed indicators. PLS-SEM enables the simultaneous examination of the measurement model (validity and reliability of constructs) and the structural model (relationships between constructs) within a single analysis. In this study, PLS-SEM was applied to test hypotheses regarding the relationships between knowledge, attitude, belief, opportunity, and practice, and to propose a conceptual model of obesity management among primary care nurses.

To ensure the validity and reliability of the statistical analyses, several steps were taken. Firstly, the questionnaires used to assess nurses' knowledge, attitudes, beliefs, opportunities, and practices were adapted from validated instruments and underwent

rigorous translation and pilot testing to ensure cultural and linguistic appropriateness. Secondly, Cronbach's alpha coefficients were calculated to assess the internal consistency reliability of the questionnaire items, with a value of 0.738 indicating good internal consistency. Thirdly, the measurement model of PLS-SEM was evaluated to assess the validity and reliability of the constructs, including confirmatory factor analysis and assessment of composite reliability and average variance extracted. Finally, sensitivity analyses were conducted to test the robustness of the findings and assess the impact of potential outliers or influential observations on the results.

RESULTS

Table I shows the descriptive statistics of 234 nurses who participated in this study. On average, the participants were found to be at the age of 34.68 years (SD = 6.27), years of working experience (M=10.06, SD=6.21), and BMI (M = 25.81, SD = 4.15). More than half of the participants (56.4%) reported that they could not remember whether they had attended obesity-related, while 23.5% claimed that they had attended obesity-related courses and 20.1% reported that they had never attended such courses. In terms of participation in training on obesity after graduation, 41.0% reported that they had undergone the training in less than a week, while 59.0% had not participated in any training. Primary care nurses have a moderate level of knowledge (M=5.56, SD = 1.98), attitudes towards obesity management, (M=3.26, SD = 0.29) the nurses reported a relatively high level of belief in the effectiveness of obesity management strategies (M=4.43, SD=0.62). Furthermore, nurses perceived a favourable level of opportunities to address obesity within their healthcare settings, (M=4.31, SD=0.75) with a high level of engagement in obesity management practices (M=8.24, SD = 2.88).

Table I: Summary of Descriptive Statistics for Participant Demographic (N=234)

Variable	Mean	SD
Age	34.68	6.27
Year of working experience	10.06	6.21
Body Mass Index (BMI)	25.81	4.15
	Frequency	**Percentage (%)**
Attended obesity-related course during studies		
Do not remember	132	56.4
Yes	55	23.5
No	47	20.1
Followed training on obesity after graduation		
Yes	96	41
No	138	59
Type of training on obesity after graduation		
Short training (less than a week)	96	41
Long training (more than a week)	0	0
No training	138	59

Table II shows the relationships between knowledge, attitude, belief, and opportunity in managing obesity clients and practice among primary care nurses. There are significant associations between the practice of managing obesity with attitude (r = 0.17, p = 0.009), belief (r = 0.46, p < 0.001) and opportunity to address obesity (r = 0.57, p < 0.001). Partial Least Square-Structure Equation Modelling (PLS-SEM) software is used to analyse the structural equation modelling (SEM) where the relationship between the variables (knowledge, beliefs, attitudes, opportunity, and practices related to obesity) is analysed and expressed in single or multiple regression equations. Figure 1 shows the testing of the outer model focuses on the relationship between each indicator and the study variables. Outer model analysis is carried out to ensure that the measurements used are feasible to use as measurements (valid, reliable, and no multicollinearity occurs). The outer model is a measurement model consisting of indicators and paths that link them to each factor. Figure 2 shows the inner model of the structural model that is used to predict causal relationships between the latent variables.

Table II: Correlation between Knowledge, Attitudes, Beliefs, Opportunities, and Practices Related to Obesity Among Primary Care Nurses

Variable	Min-Max Score	Mean	SD
Knowledge	0-8	5.56	1.98
Attitude	5-Jan	3.26	0.29
Belief	5-Jan	4.43	0.62
Opportunity	5-Jan	4.31	0.75
Practice	0-10	8.24	2.88

N= 234

Variables	Practice	
	Pearson correlation, r	p-value
Knowledge	0.08	0.249
Attitude	0.17	0.009*
Belief	0.46	<0.001*
Opportunity	0.57	<0.001*

*. Significant at 0.05 level.

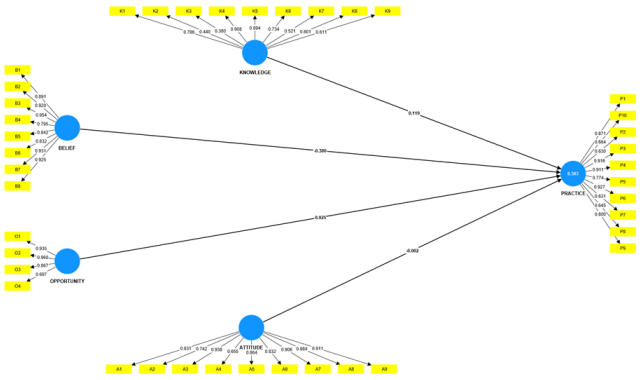

Figure 1: Outer Model

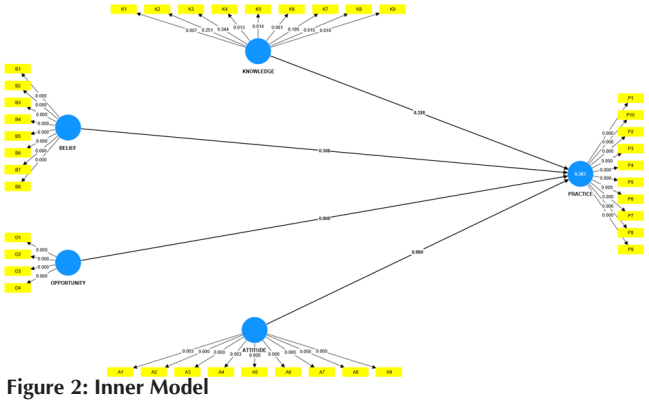

Figure 2: Inner Model

DISCUSSION

The results indicated that primary care nurses demonstrated a moderate level of knowledge in managing obesity, with most having knowledge of a healthy diet and current physical exercise guidelines (7). However, there was a concerning lack of knowledge regarding nutritional aspects, highlighting a significant gap in nurses' understanding of holistic obesity management(8). This moderate level of knowledge among primary care nurses may have implications for patient outcomes and healthcare quality. For instance, inadequate knowledge could lead to suboptimal patient care, missed opportunities for early intervention, and ineffective management of obesity-related complications. Targeted training programmes or continuing education initiatives are essential to address these knowledge gaps and enhance nurses' competency in obesity management. By improving nurses' knowledge base, healthcare organisations can ensure better patient outcomes, improved healthcare quality, and enhanced patient satisfaction. Many studies reported and suggested that nurses should further education or training about healthy lifestyle assessment, obesity management and others (9). Nurses are encouraged to update their knowledge of pharmacological options to treat obesity and their understanding of the efficacy, methods of action, and clinical trial findings to support the most effective intervention decisions (10,11).

Conversely, the study found that primary care nurses exhibited a positive attitude towards obesity management and reported high levels of engagement in related practices. This positive disposition among nurses may stem from various factors, including personal beliefs (12,13), professional values, and organizational culture (14,15). Nurses' intrinsic motivation to provide patient-centred care and contribute to improving patient health outcomes likely influences their positive attitudes and high levels of engagement. Moreover, organizational support, resource allocation, and policy interventions play crucial roles in facilitating effective obesity management practices among primary care nurses. By fostering a supportive work environment, providing adequate resources, and implementing evidence-based policies, healthcare organizations can empower nurses to deliver high-quality obesity management services and contribute to population health improvement efforts. Primary care nurses reported a high level of engagement in obesity management practices, aligning with findings from previous studies where nurses have been shown to offer advice and health education on obesity management, as well as promote healthy behaviours (9,15). Another qualitative observational study found that the nurses initiated the conversation or health education related to obesity management and reported that 80% of patients expressed their satisfaction with the health education given by nurses following their advice on obesity management (16). Nurses who have good practice in obesity management, are willing to provide obesity management to patients such as advising on physical activity, discuss weight management, diet intake, measure BMI and others (9,17). Nurses need to become good role models for patients to make sure that health education becomes more effective (18,19). This study also revealed that primary care nurses had a strong belief in the effectiveness of obesity management strategies, such positive beliefs can contribute to their motivation and commitment to implementing effective interventions for patients struggling with obesity. Primary care nurses indicated perceived positive opportunities for obesity management, suggesting that the nurses believed there were adequate resources, support, and infrastructure available for them to manage obesity effectively within their healthcare settings. PLS-SEM analysis presented that the convergent validity test indicated that all variables (knowledge, attitude, belief, opportunity, and practice) are valid, suggesting that each construct explains 50% or more of the variance of the items within the construct. This emphasises that the training related to obesity patient management is important to enhance the knowledge of nurses while also increasing positive attitudes among them. Training can also significantly improve obesity management by instilling the belief that obesity is a disease that requires appropriate treatment while providing individuals with the opportunity to practice these treatment strategies. There are some potential factors to consider for inclusion in future studies or analyses could be resource availability such as time, staffing, equipment, and support systems may significantly impact a nurse's ability to engage in obesity management practices. Personal factors of the nurses such as motivation, self-efficacy, and personal beliefs, can also be significant in determining a nurse's engagement in obesity management practices. It's important to note that these personal factors are not static and can be influenced by training, experiences, and changes in one's professional journey. Other various factors can influence a nurse's engagement in obesity management practices, including patient-specific variables like motivation and compliance, and the impact of the work environment and patient load on time and effort allocation. Other studies found that the main healthcare providers' challenges are lack of knowledge and training in aspects such as current

assessment and counselling strategies, and behaviour management techniques in obesity (11). The nurses need additional training in weight management and obesity care to effectively participate in collaborative weight management (21). Patients who had recently been diagnosed with conditions like hypertension or high cholesterol levels were also the focus of this advice (17). However, in another study, healthcare providers have cited lack of time, limited reimbursement, and lack of training as major barriers that prevent them from addressing obesity with their patients (22).

In terms of implications for nursing practice, education, and policy development, the study findings underscore the importance of investing in targeted training programmes and continuing education initiatives for primary care nurses. These programmes should focus on enhancing nurses' knowledge of obesity management principles, improving their skills in patient assessment and counselling, and fostering a patient-centred approach to care delivery. Additionally, healthcare organisations should prioritise resource allocation for obesity management, provide organisational support for nurses, and advocate for policy interventions that promote healthy behaviours and facilitate effective obesity management practices. By addressing these factors, healthcare organisations can enhance the capacity of primary care nurses to effectively manage obesity and contribute to improving population health outcomes.

CONCLUSION

In conclusion, this study has made significant strides towards addressing the pressing need for enhanced obesity management among primary care nurses in Malaysia. By developing a comprehensive training needs model, key areas are identified for improvement in nurses' knowledge, attitudes, beliefs, opportunities, and practices related to obesity management. The findings highlight the importance of targeted training programmes and continuing education initiatives to address knowledge gaps and enhance nurses' competency in obesity management. Moving forward, it is essential to prioritise the implementation of these training programmes and integrate them into nursing practice and education. Additionally, organisational support, resource allocation, and policy interventions play pivotal roles in facilitating effective obesity management practices among primary care nurses. By addressing these needs and fostering a supportive environment for nurses, we can strengthen the healthcare system's capacity to combat the obesity epidemic and improve the health outcomes of individuals and communities in Malaysia.

ACKNOWLEDGEMENTS

The research was funded by the Ministry of Higher Education Fundamental Research Grant Scheme (FRGS) with project ID FRGS19013-0621.

REFERENCES

1. Vaamonde, J. G., & Блvarez-Myn, M. A. (2020). Obesity and overweight. In Medicine (Spain) (Vol. 13, Issue 14, pp. 767–776). https://doi.org/10.1016/j.med.2020.07.010
2. NHMS. (2019). FactSheet_BI_AUG2020.pdf. www.iku.gov.my/nhms
3. Chan, Y. Y., Lim, K. K., Lim, K. H., Teh, C. H., Kee, C. C., Cheong, S. M., Khoo, Y. Y., Baharudin, A., Ling, M. Y., Omar, M. A., & Ahmad, N. A. (2017). Physical activity and overweight/obesity among Malaysian adults: Findings from the 2015 National Health and morbidity survey (NHMS). BMC Public Health, 17(1), 1–12. https://doi.org/10.1186/s12889-017-4772-z
4. Ramasamy, A., Lalibertй, F., Aktavoukian, S. A., Lejeune, D., Dersarkissian, M., Cavanaugh, C., Smolarz, B. G., Ganguly, R., & Duh, M. S. (2019). Direct and Indirect Cost of Obesity among the Privately Insured in the United States: A Focus on the Impact by Type of Industry. Journal of Occupational and Environmental Medicine, 61(11), 877–886. https://doi.org/10.1097/JOM.0000000000001693
5. Olander, E. K., & Scamell, M. (2016). Teaching students about maternal obesity without creating obesity stigma. Nurse Education Today, 42, 59–61. https://doi.org/10.1016/j.nedt.2016.04.009
6. Mustapha, F. I., Omar, Z. A., Mihat, O., Md Noh, K., Hassan, N., Abu Bakar, R., Abd Manan, A., Ismail, F., Jabbar, N. A., Muhamad, Y., Rahman, L. A., Majid, F. A., Shahrir, S. N., Ahmad, E., Davey, T., & Allotey, P. (2014). Addressing non-communicable diseases in Malaysia: An integrative process of systems and community. BMC Public Health, 14(SUPPL. 2), S4. https://doi.org/10.1186/1471-2458-14-S2-S4
7. Bucher Della Torre, S., Courvoisier, D. S., Saldarriaga, A., Martin, X. E., & Farpour-Lambert, N. J. (2018). Knowledge, attitudes, representations and declared practices of nurses and physicians about obesity in a university hospital: training is essential. Clinical Obesity, 8(2), 122–130. https://doi.org/10.1111/cob.12238
8. Carausu, E. M., Burlea, L. S., Lupu, I. C., & Antohe, I. (2016). A study on the cognitive level of health education for secondary school students from the rural environment. Revista de Cercetare Si Interventie Sociala, 55(February 2017), 19–30.
9. Kable, A., James, C., Snodgrass, S., Plotnikoff, R., Guest, M., Ashby, S., Oldmeadow, C., & Collins, C. (2015). Nurse provision of healthy lifestyle advice to people who are overweight or obese. Nursing and Health Sciences, 17(4), 451–459. https://doi.org/10.1111/nhs.12214
10. Kwilas, A. R., Donahue, R. N., Tsang, K. Y., & Hodge, J. W. (2015). 乳鼠心肌提取 HHS Public Access. Cancer Cell, 2(1), 1–17. https://doi.org/10.1016/j.nedt.2019.03.006.Advanced
11. Artemyeva, A. A., Samarina, T. O., Sharov, A. V., Abramchuk, S. S., Ovcharenko, E., Dityuk, A. I.,

Efimov, K. M., Beklemishev, M. K., U.S. Department of Health and Human Services, Adela Hruby, PhD, M., Frank B. Hu, MD, PhD, M., Hakkak, R., Bell, A., . A. khan A. A. K., . M. M. A. K. K. M. S., . M. M. A. K. K. M. S., . A. khan A. A. K., Joly, B. M., Coronado, F., … Ball, P. (2018). A social cognitive model for health education/health promotion practice. Medical Journal of Malaysia, 12(1), 1–10. https://doi.org/10.1046/j.1365-2648.2001.01973.x

12. Budd, G. M., Mariotti, M., Graff, D., & Falkenstein, K. (2011). Health care professionals' attitudes about obesity: An integrative review. In Applied Nursing Research (Vol. 24, Issue 3, pp. 127–137). https://doi.org/10.1016/j.apnr.2009.05.001
13. Leeman, J., Sommers, J., Vu, M., Jernigan, J., Payne, G., Thompson, D., Heiser, C., Farris, R., & Ammerman, A. (2012). An Evaluation Framework for Obesity Prevention Policy Interventions Center TRT ' s Approach to Policy Evaluation. 9(6), 1–9.
14. Blake, H., Watkins, K., Middleton, M., & Stanulewicz, N. (2021). Obesity and diet predict attitudes towards health promotion in pre-registered nurses and midwives. International Journal of Environmental Research and Public Health, 18(24). https://doi.org/10.3390/ijerph182413419
15. Nicholls, W., Pilsbury, L., Blake, M., & Devonport, T. J. (2016). The attitudes of student nurses towards obese patients: A questionnaire study exploring the association between perceived causal factors and advice giving. In Nurse Education Today (Vol. 37, pp. 33–37). https://doi.org/10.1016/j.nedt.2015.11.009
16. Walsh, K., Grech, C., & Hill, K. (2019). Health advice and education given to overweight patients by primary care doctors and nurses: A scoping literature review. In Preventive Medicine Reports (Vol. 14). Elsevier Inc. https://doi.org/10.1016/j.pmedr.2019.01.016
17. Phillips, K., Wood, F., & Kinnersley, P. (2014). Tackling obesity: The challenge of obesity management for practice nurses in primary care. Family Practice, 31(1), 51–59. https://doi.org/10.1093/fampra/cmt054
18. Darch, J., Baillie, L., & Gillison, F. (2017). Nurses as role models in health promotion: A concept analysis. British Journal of Nursing, 26(17), 982–988. https://doi.org/10.12968/bjon.2017.26.17.982
19. Jay, M., Chintapalli, S., Squires, A., Mateo, K. F., Sherman, S. E., & Kalet, A. L. (2015). Barriers and facilitators to providing primary care-based weight management services in a patient centered medical home for Veterans: A qualitative study. BMC Family Practice, 16(1). https://doi.org/10.1186/s12875-015-0383-x
20. B, S., D, N., & SB, I. (2018). Does Body Mass Index of Nursing Students Correlate with Their Attitude towards Obesity? Asian Journal of Medicine and Biomedicine, 2(December), 1.
21. Bleich, S. N., Bandara, S., Bennett, W. L., Cooper, L. A., & Gudzune, K. A. (2015). U.S. Health professionals' views on obesity care, training, and self-efficacy. American Journal of Preventive Medicine, 48(4), 411–418. https://doi.org/10.1016/j.amepre.2014.11.002
22. Turner, M., Jannah, N., Kahan, S., Gallagher, C., & Dietz, W. (2018). Current Knowledge of Obesity Treatment Guidelines by Health Care Professionals. Obesity, 26(4), 665–671. https://doi.org/10.1002/oby.22142