

# The Level of Self-Efficacy in Obesity Counselling and its Associated factors Among Primary Care Doctors in East Coast Malaysia

Yunus NA<sup>a</sup>, Ahmad Zawawi MAF<sup>b</sup>, Mohd Yusoff SS<sup>a</sup>, Abdul Rahman R<sup>a</sup>

<sup>a</sup>Department of Family Medicine, School of Medical Sciences, Universiti Sains Malaysia, Kelantan, Malaysia.

<sup>b</sup>Klinik Kesihatan Seksyen 19, Ministry of Health Malaysia, Selangor, Malaysia.

## ABSTRACT

**INTRODUCTION:** Obesity counselling is imperative in the management of obesity. Hence the self-efficacy of the primary care doctors (PCDs) in obesity counselling influences the outcome. This study investigated the level of self-efficacy in obesity counselling among PCDs and its associated factors. **MATERIALS AND METHODS:** This was a web-based cross-sectional survey involving 156 PCDs working in government health clinics. Participants were selected by simple random sampling and were invited through a letter. Participants then visited the survey website and filled up an online questionnaire. The level of self-efficacy was assessed using the Obesity, Nutrition, and Physical Activity Counselling by Residents (ONPAR) questionnaire. The data was analysed using SPSS software version 22 and presented as mean (SD) or frequency (%). Simple and multiple linear regression analysis were performed. Significant p-value was set at 0.05 with a 95% confidence interval. **RESULTS:** The response rate was 79.5%. The mean score for self-efficacy in obesity counselling was 66.9% (10.67) with the lowest mean score was for the “*confidence in prescribing a plan for physical activity for someone with arthritic knees*”. The mean knowledge score was 55.4% (23.9). The level of self-efficacy was associated with knowledge on obesity management guidelines recommendations ( $p=0.02$ , 95% CI 0.02, 0.17). **CONCLUSIONS:** The level of self-efficacy in obesity counselling among government PCDs in East Malaysia was modest. The best predictor of higher self-efficacy in obesity counselling is knowledge of the obesity management guidelines recommendations. A structured training program is needed to improve self-efficacy among primary care doctors.

## Keywords

Knowledge, obesity, primary health care, self-efficacy.

## Corresponding Author

Assoc. Prof. Dr. Razlina Abdul Rahman,  
Family Medicine Specialist and Lecturer  
Department of Family Medicine,  
School of Medical Sciences  
Universiti Sains Malaysia Health Campus  
16150 Kubang Kerian,  
Kelantan, Malaysia  
E-mail: razlina@usm.my

Received: 1<sup>st</sup> July 2024; Accepted: 8<sup>th</sup>  
September 2024

Doi: <https://doi.org/10.31436/imjm.v24i01.2635>

## INTRODUCTION

Obesity is a major health concern globally.<sup>1,2</sup> Its prevalence in Malaysia is increasing,<sup>2</sup> and is the highest among the Southeast Asia nations.<sup>1</sup> Malaysia National Health Morbidity Survey 2019 (NHMS19) showed one in two adults in Malaysia were overweight or obese. The steady rising trend in obesity prevalence among the adults from 17.7% in 2015 to nearly 20% in 2019 is concerning as obesity is linked to various health implications<sup>3-5</sup> including cardiovascular disease,<sup>6</sup> which is a leading cause of death worldwide.<sup>7</sup> Furthermore, obesity has also shown a strong relationship with the development of cancers such as endometrial, breast and colorectal cancers<sup>5</sup> which makes it even more important to curb its growth.

Obesity counselling plays a crucial role in the management of obesity.<sup>8,9</sup> Primary care doctors (PCDs), being the first contact, may initiate crucial discussions about weight control, offer guidance on healthy lifestyle decisions, and create customised treatment strategies for their patients.<sup>10</sup> Previous research indicated that patients who received weight counselling from PCDs were more likely to modify their diet, enhance physical activity habits, and achieved weight loss,<sup>11,12</sup> highlighting the importance of obesity-related discussions with these patients.

Studies also showed the effectiveness of obesity counselling is determined by various factors, including the

self-efficacy of PCDs in the task.<sup>13</sup> Self-efficacy is conceptualised as an individual's belief in their ability to successfully perform a specific task, which influences their approach to challenges and their perseverance in overcoming barriers.<sup>14</sup> Research suggests that PCDs with higher levels of self-efficacy in obesity counselling are more likely to engage in obesity management.<sup>15</sup> Conversely, PCDs with low self-efficacy may struggle to engage patients in meaningful discussions about weight management and may not feel confident in their ability to provide effective obesity management.<sup>16</sup>

Despite the high prevalence of obesity, literature shows that the level of self-efficacy in obesity counselling among doctors is low to average.<sup>17-19</sup> The low-to-average level is contributed by various factors including inadequate knowledge in obesity management, lack of structured programmes and monitoring, environmental barriers to weight loss, and previous experiences of unsuccessful obesity management.<sup>20</sup> Most of these earlier studies were among health professionals in the developed countries with advanced healthcare system.<sup>19,20</sup> Yet, studies examining the self-efficacy in obesity counselling among doctors in the developing countries are scant.

A Malaysian study among community pharmacists found that the participants were willing to help patient who want to lose weight, but their services were limited to blood pressure and blood sugar measurement, giving dietary and exercise advice, and selling weight loss products.<sup>21</sup> Another study found that health practitioners in Malaysia had the motivation and capacity to engage in obesity management.<sup>22</sup> Yet, they did not assess the level of self-efficacy of the practitioner and found that despite being motivated, the study participants did not discuss the weight problems with their patients.

The limited consultation time, having more important health issues to manage and perceived poor motivation by patients were the given reasons for not discussing weight by this cohort.<sup>22</sup> Noting the importance of self-efficacy and the lack of studies in the area, this study aimed to investigate the level of self-efficacy in obesity counselling among PCDs and its associated factors. Findings from this study may aid the stakeholders to design appropriate

interventions to enhance self-efficacy among PCDs in managing obesity in community settings.

## **MATERIALS AND METHODS**

### ***Study Design and Population***

This was a web-based cross-sectional study conducted from October 2016 to January 2017. The study involved PCDs at government health clinics in three states in east-coast of Malaysia. The inclusion criteria included having the Malaysian Medical Council full registration number and working experience in government health clinics for at least three months. Family Medicine Specialists (FMS) were excluded as they had advanced training in primary care counselling.

The sample size was calculated for each objective, and the highest number was taken as the study sample size. The largest sample size was from the objective meant to determine the factors associated with self-efficacy in obesity counselling, calculated using the general formula;  $n=50 + 8m$  (where  $m$  is the number of the independent variables) for testing the multiple correlations.<sup>23</sup> Given that ten independent variables were included in the multivariate regression model, the minimum sample required for the regression analysis was 130. After adding a 20% non-response rate, the estimated sample size was 156.

### ***Data Collection Procedure***

The list of eligible PCDs ( $n=589$ ) were obtained from the three respective state health departments. Study samples were selected from the list using a simple random table. An invitation letter containing the study explanatory statement and the approval letter from the Ministry of Health was sent to the selected participants. Data collection was conducted via SurveyMonkey®. Participants were asked to visit the survey website and answer the questionnaire within four weeks. Each participant was assigned an identification code as a username and a common password to access the questionnaire. An implied informed consent statement was shown on the introductory page of the survey website, where participants gave consent by clicking 'Yes' and 'Agree to proceed'. A reminder text message was sent to participants who had not responded after four weeks. Another four weeks were

provided to complete the questionnaire before we concluded the data collection. The responses were stored in the SurveyMonkey® database, which was only accessible to the principal investigator.

### **Measures**

The level of self-efficacy in obesity counselling was measured using a questionnaire from a previous study, the Obesity, Nutrition, and Physical Activity Counselling by Residents (ONPAR) survey with permission. The questionnaire consisted of nine items with a 5-point Likert scale response (1 for “Strongly Disagree”, 2 for “Disagree”, 3 for “Neither agree nor disagree”, 4 for “Agree”, and 5 for “Strongly Agree”). The total score was converted to percentage, and the level of self-efficacy was reported as a mean percentage score. A higher mean score represented a higher self-efficacy level. The questionnaire has a person reliability score of 0.85 and an item reliability score of 0.98. It was originally used among senior postgraduate trainees in family medicine, internal medicine, and obstetrics and gynaecology. This questionnaire was appropriate for our study as it has been tested in the healthcare population. The language was kept in its original English language, which is the common language used in medical practice in Malaysia.

The factors associated with self-efficacy in obesity counselling were divided into doctor’s demographics, clinical characteristics, and knowledge of clinical practice guidelines for obesity management. The doctor’s characteristics included age, ethnicity, and gender. Clinical characteristics variables were working duration in primary care, involvement in the non-communicable disease team, having a family medicine specialist at the clinic, and having formal training in counselling skills, physical activity recommendations and dietary advice.

Knowledge of clinical practice guidelines for obesity was assessed using seven multiple choice questions regarding the definitions of obesity and overweight in adults and adolescents, weight reduction target, physical activity recommendation for long-term weight loss, and limit of sugar-sweetened beverages. The questions were adapted from Physician Survey of Practice in Diet, Physical

Activity, and Weight Control: Questionnaire on Adult Care<sup>24</sup> and developed based on the Malaysian clinical practice guidelines for obesity.<sup>25</sup> Participants chose one correct answer for each question, and the knowledge of clinical practice guideline was measured as the percentage of the number of correct answers out of seven items and was presented as mean (SD) of the percentage score.

### **Analysis**

Data were analysed using SPSS software version 22.<sup>26</sup> Descriptive statistics were used to summarise the socio-demographic characteristics. Data were presented as mean (SD) or frequency (%), as appropriate. A significant p-value was set at 0.05, with a 95% confidence interval. The level of self-efficacy was reported as the mean (SD) percentage score. Multiple linear regression analysis was performed to determine the factors associated with self-efficacy in obesity counselling. The independent variables were age, ethnicity, gender, working duration in primary care, involvement in the non-communicable disease team, having a family medicine specialist at the clinic, having formal training in counselling skills, having formal training in physical activity recommendations, having formal training in dietary advice, and knowledge on clinical practice guidelines for obesity.

A two-step regression analysis was applied, starting with a univariate analysis of each independent variable. Variables with moderate association ( $p < 0.20$ ) with self-efficacy were included in multivariate analysis, applying the simultaneous multiple regression approach. Significant interactions ( $p < 0.05$ ) were retained in the final model. Preliminary screening of the residual plots was conducted to ensure no violation of multiple regression assumptions (normality, linearity and homoscedasticity, and outliers). Multicollinearity was checked through correlations between independent variables, tolerance, and variance inflation factor.

### **RESULTS**

Out of the 156 doctors invited, 124 completed the survey, giving the response rate of 79.5%. There was no missing data for all items. The mean (SD) age of the participants

**Table 1:** Participants' demographic and clinical set-up and training (n=124)

Participant's characteristics	n (%)	Mean (SD)
Age		30.7 (4.21)
Sex		
Male	37 (29.8)	
Female	87 (70.2)	
Ethnic		
Malay	112 (90.3)	
Others	12 (9.7)	
Working duration in primary care (years)		2.2 (2.4)*
Presence of a family medicine specialist		
Yes	60 (48.4)	
No	64 (51.6)	
Involvement in NCD <sup>^</sup> team		
Yes	98 (79)	
No	26 (21)	
Formal training in counselling		
Yes	43 (34.7)	
No	81 (65.3)	
Formal training in physical activity		
Yes	37 (29.8)	
No	87 (70.2)	
Formal training in dietary and nutrition advice		
Yes	33 (26.6)	
No	91 (73.4)	

\*=Median (IQR), <sup>^</sup>non-communicable disease

was 30.7 (4.21) years old. The median (IQR) for working duration in primary care was 2.2 (2.4) years. Table 1 shows the demographic profile of the participants.

The mean (SD) self-efficacy in obesity counselling score among primary care doctors was 66.9% (10.67). The respondents gave the highest mean score for *"the confidence in discussing weight loss in a way that would maintain a positive relationship with the patient"*. Meanwhile, the lowest mean score was for the *"confidence in prescribing a plan for physical activity for someone with arthritic knees"*. Table 2 shows the

**Table 2:** Mean score for self-efficacy items

Self-efficacy items	Mean (1 to 5)	(SD)
I feel confident in my ability to improve overweight patients' dietary habits.	3.46	(0.76)
I am confident in my ability to assist patients in developing a plan for physical activity.	3.41	(0.78)
I feel well-prepared to follow evidence-based guidelines in counselling my overweight patients on diet.	3.26	(0.84)
I'm confident that I could discuss weight loss in a way that would maintain a positive relationship with the patient.	3.71	(0.59)
I am able to determine if a patient meets appropriate guidelines for physical activity.	3.38	(0.73)
I am able to identify specific community resources to support a patient's effort to lose weight.	3.10	(0.87)
I feel confident prescribing a plan for physical activity for someone with arthritic knees.	2.93	(0.89)
I am able to motivate and guide patient for behaviour change during interview.	3.51	(0.74)
I am effective in assisting patients who express an interest in making a change with weight (setting goals, next steps, follow-up).	3.39	(0.89)

mean score for each self-efficacy item.

The mean (SD) correct answers given by the participants was 3.88 (1.7) out of seven items. Most participants answered correctly on the question regarding the target for weight reduction among obese and overweight patients to prevent diabetes mellitus but did poorly on the question on the physical activity recommendation for overweight and obese individuals to achieve long term weight lost. The percentage of correct answers for each item is presented in Table 3. The mean percentage for correct answer for knowledge was 55.4% (23.9).

**Table 3:** Percentage of correct answers for knowledge questions

Items*	Percentage of participants answer correctly
1 What is the cut-off point for overweight in adults?	68.5%
2 What is the cut-off point for obesity in adults?	62.1%
3 What is the cut-off point for overweight in children and adolescents?	54.0%
4 What is the cut-off point for obesity in children and adolescents?	67.7%
5 What is the target of weight reduction among obese and overweight patients to prevent type II DM?	77.4%
6 What is the physical activity recommendation for overweight and obese individuals to achieve long term major weight loss?	16.1%
7 What is the limit of sugar-sweetened beverages should a person have in a day to prevent type II DM?	41.9%

Six factors showed moderate correlations with self-efficacy in the univariate analysis and were retained in the multivariate analysis. Simultaneous multiple regression was used to predict whether sex, involvement in NCD team, training in counselling skills, training in physical activity recommendation, training in dietary advice and level of knowledge of obesity management guidelines predict the level of self-efficacy in obesity counselling. We found that the level of knowledge of obesity management guideline was significantly associated with the level of self-efficacy in obesity counselling ( $p=0.02$ , 95% CI 0.02, 0.17) (Table 4). An increase in one standard deviation unit of the level of knowledge score would likely result in an increase in the level of self-efficacy in obesity counselling by 0.21 standard deviation unit. This model explained 16.2% of the variance in self-efficacy in obesity counselling ( $R^2=0.162$ ,  $F(6, 117)=3.76$ ,  $p<0.05$ ).

**Table 4:** Multivariate linear regression analysis of factors associated with self-efficacy in obesity counselling.

Variables	B (standardised coefficient) <sup>a</sup>	Standard error	p-value	95% confidence interval
Sex	0.07	2.02	0.42	-2.35, 5.65
Involvement in NCD team	0.16	2.30	0.08	-0.50, 8.62
Training in counselling skills	0.09	2.11	0.37	-2.29, 6.08
Training in physical activity recommendation	0.13	2.34	0.19	-1.55, 7.69
Training in dietary advice	0.09	2.51	0.35	-2.61, 7.33
Knowledge on CPG recommendation	0.21	0.04	0.02	0.02, 0.17

<sup>a</sup> Simultaneous multiple regression model was applied.

## DISCUSSION

Primary care doctors in our study showed moderate self-efficacy in obesity counselling, with a mean self-efficacy score of 66.9%. This indicates that the primary care doctors in this survey were ambivalent about their capacity to deliver obesity counselling to their patients. This finding is consistent with earlier literature that showed despite the high prevalence of obesity in the community, medical practitioners lack sufficient self-efficacy to deliver obesity counselling to patients in need.<sup>19,20</sup> While our study focused on doctors in primary care or family medicine, other studies among internal medicine and obstetrics and gynaecology residents also revealed the same low level of self-efficacy in obesity counselling,<sup>19</sup> suggesting a general low in self-efficacy across various medical domains.

A recent study in Malaysia reported that health providers were motivated to manage obesity.<sup>22</sup> However, their efforts were limited by short consultation time, having more pressing health issues to handle and perceived patients' low motivation to manage their weight. Interestingly, these providers who mentioned high motivation to manage obesity also expressed a need for more training in this area,<sup>22</sup> which suggests that although they want to counsel their patients, their current capabilities in obesity management may not be as good. Our data supports this observation, where health providers showed the least self-efficacy in situations that required in-depth knowledge, such as physical activity

counselling for patients with knee arthritis (Table 2) while having the highest efficacy in their counselling skills.

Good knowledge of the local obesity management guidelines has been found to be a predictor of self-efficacy in our participants. This is expected since knowledge of the guidelines will aid the practice of primary care doctors and make them more assertive in their management approach. Our finding also concurred with previous findings in literature that health providers with good knowledge will have more self-efficacy and confidence in obesity management.<sup>20,27</sup> Training in counselling skills, physical activity recommendations and dietary advice showed significant associations in our univariate analysis, but it was not sustained in the multivariate model. This finding may suggest that while attending a training or workshop to increase knowledge is important, the amount of acquired knowledge is more significant in improving the self-efficacy level in our study cohort. It aligns with social cognitive theory, indicating that individuals who achieved performance mastery through an intervention experienced an improvement in their confidence and self-efficacy.<sup>14</sup>

Knowing the current level of self-efficacy among our primary care doctors is an essential initial step towards future interventions to improve their capability to manage obesity effectively. As the prevalence of obesity in Malaysia is already high and continues to increase,<sup>2</sup> primary care providers should be well-equipped and well-trained to manage patients with obesity effectively. The four ingredients of effective intervention in empowering health practitioners suggested by Katz et al still stands.<sup>28</sup> These include i) deliberate dissemination of information to the practitioners to improve their knowledge, ii) development of skills to motivate patients to act, iii) development of robust sense of self-efficacy to face difficulties, and iv) creating and arranging social support to achieve and maintain changes.<sup>28</sup> Clinical management leaders and policymakers should plan measures to improve the knowledge among doctors in primary care, especially on the local obesity management guidelines as suggested by Katz et al. The training content should not be limited to basic dietary and physical activity advice but

should be expanded to include modifications to suit personalised patient needs. The content and methods of obesity training or guidelines should ensure a good grasp of knowledge by PCDs. In addition, PCDs should also be exposed on various counselling technique and clinical mentoring or credentialing approaches may be needed in addition to the traditional workshop or talk to enhance performance mastery.

At the time this study was done, the clinical practice guideline (CPG) on obesity was still in its outdated version. The new obesity CPG was released last year and emphasizes more on the need for individualization of obesity treatment and discuss more options for weight reduction approaches.<sup>29</sup> Diet modifications and physical activities prescription need to be tailored according to the patient's profile, readiness and preference instead of general advice.<sup>29</sup> The current CPG is more comprehensive and include sections on psychological and behavioural therapy which is an integral element in changing one's behaviour. Nonetheless, the training on the new guidelines need to include the practical approach through workshops and case studies to help the PCDs in their counselling of more difficult patients especially those with multiple comorbidities or physical limitations. As shown by our results, many PCDs knows the general management of obesity but when it comes to difficult cases such as specific physical activity recommendation, many scored poorly. In addition, the training must include workshops in motivational interview since behavioural changes requires patient's participation to ensure its success.

The strength of this study lies in the probability sampling method applied in this survey. The findings may be generalised among the government PCDs within east coast Malaysia healthcare providers. However, the findings are limited only to the region, and we need to be cautious if we want to extrapolate it to all PCDs in Malaysia due to the possibility of different exposures and practice. Larger nationwide study involving the private and public PCDs need to be carried out to get the true picture of the self-efficacy level of all PCDs in Malaysia. Moreover, this study was carried out before the new CPG was released and the obesity issue was not so popular in the mainstream media.

Since the released of the new CPG in 2023, several training workshops has been carried out by the Ministry of Health Malaysia. It would be interesting to repeat a similar study in the next few years to see if the outcome would be different. Additionally, the cross-sectional study design limits the study's exploration of the causal relationship between exposures and outcomes. Lastly, only less than 20 per cent of the factors associated with self-efficacy in obesity counselling were explained by our regression model and thus further exploration is warranted to identify more factors influencing the self-efficacy level among the PCDs.

## **CONCLUSION**

Obesity has a far-reaching effect to the individual and the society, and puts a strain on health care resources. Hence, obesity needs to be tackled promptly. PCDs play a huge role to prevent, reduce, and manage obesity complications since they are operating in the community. Nonetheless, the current level of self-efficacy in obesity counselling among the PCDs in our study is only moderate at best. The best predictor of high level of self-efficacy in obesity counselling is knowledge of the local guidelines, and thus immediate action is needed to enhance the knowledge on obesity management among all PCDs as well as polishing their counselling skills so that they may be more equip to handle obesity patient.

## **DATA AVAILABILITY STATEMENT**

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

## **AUTHOR CONTRIBUTIONS**

NAY contributed to the conception and design of the study, data analysis and write the initial draft. MAFAZ contributed to the conception and design of the study, conducted the research, collected, analyse, and interpreted the data. SSY provided advice on study design and methodology and edited the manuscript's final draft. RAR contributed to the conception and design of the study, data analysis and substantially edited the manuscript before final submission. All the authors have critically

reviewed and approved the final draft of this manuscript and are responsible for the content and similarity index of the manuscript.

### CONFLICT OF INTEREST

The authors declare there is no conflict of interest in the conduct and publication of this study.

### INSTITUTIONAL REVIEW BOARD (ETHIC COMMITTEE)

The study protocol was reviewed and approved by the Universiti Sains Malaysia Human Research Ethics Committee (USM/JEPeM/16040167) and the Medical Research and Ethics Committee, Ministry of Health Malaysia (NMRR-16-724-30306(IIR)). The study adhered to the Declaration of Helsinki, 2013, and all participants provided consent before inclusion where in this web-based survey, a consent statement was shown on the introductory page of the survey website and participants needed to give consent by clicking 'Yes' and 'Agree to proceed' before they can answer the questionnaire.

### ACKNOWLEDGEMENTS

This research was supported and funded by Universiti Sains Malaysia Short-Term Research Grant for (304/PPSP/6315010). We thank Associate Professor Dr Norhayati Mohd Noor for her help and advice with our data analyses.

### REFERENCES

1. Ng M, Fleming T, Robinson M, Thomson B, Graetz N, Margono C, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet* 2014;384(9945):766-81.
2. Institute for Public Health. National Health and Morbidity Survey 2019 Non-communicable disease, healthcare demand and health literacy 2019.
3. De Lorenzo A, Romano L, Di Renzo L, et al. Obesity: A preventable, treatable, but relapsing disease. *Nutrition* 2020;71:110615.
4. Heymsfield SB, Wadden TA. Mechanisms, Pathophysiology, and Management of Obesity. *N Engl J Med* 2017;376(3):254-66.
5. Renehan AG, Soerjomataram I, Tyson M, et al. Incident cancer burden attributable to excess body mass index in 30 European countries. *Int J Cancer* 2010;126(3):692-702.
6. Kim SH, Després J-P, Koh KK. Obesity and cardiovascular disease: friend or foe? *Eur Heart J* 2016;37(48):3560-8.
7. World Health Organisation. The top 10 causes of death. Available at: <http://www.who.int/mediacentre/factsheets/fs310/en/> Accessed 18th April 2017.
8. Curry SJ, Krist AH, Owens DK, et al. Behavioral Weight Loss Interventions to Prevent Obesity-Related Morbidity and Mortality in Adults: US Preventive Services Task Force Recommendation Statement. *JAMA* 2018;320(11):1163-71.
9. Kahan S, Manson JE. Obesity Treatment, Beyond the Guidelines: Practical Suggestions for Clinical Practice. *JAMA* 2019;321(14):1349-50.
10. Wharton S, Lau DCW, Vallis M, et al. Obesity in adults: a clinical practice guideline. *Can Med Assoc J* 2020;192(31):E875-E91.
11. Whitaker KM, Wilcox S, Liu J, Blair SN, Pate RR. Patient and Provider Perceptions of Weight Gain, Physical Activity, and Nutrition Counseling during Pregnancy: A Qualitative Study. *Womens Health Issues* 2015;26(1):116-22.
12. Gao S, Stone RA, Hough LJ, et al. Physical activity counseling in overweight and obese primary care patients: Outcomes of the VA-S'TRIDE randomized controlled trial. *Prev Med Rep* 2016;3:113-20.
13. Bleich SN, Bandara S, Bennett WL, Cooper LA, Gudzone KA. U.S. health professionals' views on obesity care, training, and self-efficacy. *Am J Prev Med* 2015;48(4):411-8.
14. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977;84(2):191.
15. Sturgiss E, Haesler E, Elmitt N, van Weel C, Douglas K. Increasing general practitioners' confidence and self-efficacy in managing obesity: a mixed methods study. *BMJ Open* 2017;7(1):e014314.
16. Croghan IT, Ebbert JO, Njeru JW, et al. Identifying Opportunities for Advancing Weight Management in Primary Care. *J Prim Care Community Health*

- 2019;10:2150132719870879.
17. Steeves JA, Liu B, Willis G, Lee R, Smith AW. Physicians' personal beliefs about weight-related care and their associations with care delivery: The U.S. National Survey of Energy Balance Related Care among Primary Care Physicians. *Obes Res Clin Pract* 2015;9(3):243-55.
  18. Sebiany AM. Primary care physicians' knowledge and perceived barriers in the management of overweight and obesity. *J Family Community Med* 2013;20(3):147-52.
  19. Smith S, Seeholzer EL, Gullett H, et al. Primary Care Residents' Knowledge, Attitudes, Self-Efficacy, and Perceived Professional Norms Regarding Obesity, Nutrition, and Physical Activity Counseling. *J Grad Med Educ* 2015;7(3):388-94.
  20. Ashman F, Sturgiss E, Haesler E. Exploring Self-Efficacy in Australian General Practitioners Managing Patient Obesity: A Qualitative Survey Study. *Int J Family Med* 2016;2016:8212837.
  21. Verma RK, Paraidathathu T, Taha NA, Chong WW. Attitudes, Practices, and Barriers of Malaysian Community Pharmacists Toward Provision of Weight Management Services. *Front Pharmacol* 2019;10 (February).
  22. Yunus NA, Russell G, Muhamad R, Soh S-E, Sturgiss E. The perceptions of healthcare practitioners on obesity management in Peninsular Malaysia: a cross-sectional survey. *BMC Health Serv Res* 2023;23(1):744.
  23. Tabachnick B, Fidell L. *Using Multivariate Statistics* : Pearson New International Edition. Harlow, United Kingdom: Pearson Education, Limited; 2013.
  24. Smith AW, Borowski LA, Liu B, et al. U.S. Primary Care Physicians' Diet-, Physical Activity-, and Weight-Related Care of Adult Patients. *Am J Prev Med* 2011;41(1):33-42.
  25. Ismail IS, Bebakar WMW, Kamaruddin NA, Abdullah NH, Zain FM, Noor MI, et al. *Clinical Practice Guidelines on Management of Obesity*. Ministry of Health Malaysia; 2004.
  26. IBM SPSS Statistics for Windows, Version 22.0 [computer program]. Version. Armonk, NY: IBM Corp.; Released 2013.
  27. Carrasco D, Thulesius H, Jakobsson U, Memarian E. Primary care physicians' knowledge and attitudes about obesity, adherence to treatment guidelines and association with confidence to treat obesity: a Swedish survey study. *BMC Prim Care* 2022;23 (1):208.
  28. Katz S, Feigenbaum A, Pasternak S, Vinker S. An interactive course to enhance self-efficacy of family practitioners to treat obesity. *BMC Med Educ* 2005;5 (1):4.
  29. Ministry of Health Malaysia. *The Clinical Practice Guidelines (CPG) for the Management of Obesity 2<sup>nd</sup> Edition*. Putrajaya, Malaysia: Malaysia Health Technology Assessment Section (MaHTAS), 2023.