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### RESEARCH ARTICLE

#### KNOWLEDGE, ATTITUDE AND PRACTICE OF FAMILY PHYSICIANS TOWARD OBESITY COUNSELING IN CLUSTER ONE, RIYADH, SAUDI ARABIA

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#### Abstract

**Background:** Because of the influence of culture and the fact that obesity is a new phenomenon caused by changing lifestyles, many physicians in Riyadh are not sufficiently empowered to provide the necessary services to their clients. This study will identify the gaps in family physicians' knowledge, attitude, and practice in Riyadh and recommend ways to design training programs in areas of knowledge, attitude, and practice when dealing with obesity and overweight cases.

**Methodology:** This study is a cross-sectional study to assess the knowledge, attitude and practice of family physicians regarding obesity counseling in family practice centers, cluster one, Riyadh, Saudi Arabia. The sample and data were collected by a pre-tested questionnaire and analyzed by Statistical Package for Social Sciences (SPSS) method

**Results:** The majority of the respondents depend on the waist circumference to diagnose obesity with 100% among the family physicians. The majority of the respondents think that obesity is a major health problem in Saudi Arabia with 125 (96.08%). Almost all family physicians (92.1%) agreed that it is better to have a training course in obesity management and 99 % thought that it is better to include obesity topic in health education program. Moreover, 100 % of the physicians would recommend lifestyle measure to decrease weight of regular physical exercise.

**Conclusion:** Family physicians working in the primary health centers need to improve their knowledge and skills regarding obesity management.

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#### Introduction:-

The world health organization (WHO) defines obesity as a condition of abnormal or excessive fat accumulation in adipose tissue, BMI is widely used to assess adiposity, So the overweight is defined as a BMI equal to or in excess of (25 kg/m<sup>2</sup>)(Noor et al. 2020). Family physicians in Riyadh are not currently sufficiently aware of the importance of obesity counseling and that would improve quality services to patients with obesity and overweight conditions. Still, physicians' knowledge and practice in family clinics is hampered by lack of knowledge on national guidelines on diagnosis and treatment of obesity. As a result, most patients do not get quality service as many physicians cannot provide it.

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This study will identify the knowledge, attitude, and practice needs of family clinics physicians in Riyadh and recommend training and regulation measures to empower them to give quality service to their clients. In Saudi Arabia, the prevalence of obesity and overweight among the people aged 15 years and above was 28.7% and 30.7%, respectively. Despite this high prevalence rate, several studies in Saudi Arabia have indicated that physician involvement in counselling and treatment of people with overweight or obesity issues was still minimal in the country. For example, in a study by (Sussman 2006), 80% of physicians who responded to the study questions indicated a negative attitude towards obesity. Only a third of the respondents noted that primary care physicians had a role in the management of obesity and overweight among their patients. A majority of the respondents indicated that they occasionally provided their clients with advice on physical activities and dietary habits and believed that they were well-equipped to provide obesity management services in family centers. Thus, the knowledge, attitude, and practice of family physicians regarding obesity counselling are vital in addressing this health problem among the Saudi population.

Despite the evidence that there is a high prevalence of obesity and overweight cases in Saudi Arabia and its associated harmful effects on the people. Sometimes physicians may display negative attitudes towards patients with obese cases. For example, the survey by (Habib, H.A., Rahaem, Y.A., Al-khalid, Israa Muhyi, M. 2012) identified the failure to counsel patients on weight management and nutrition and a lack of training and competence in the management of obesity cases as key obstacles towards the provision of holistic services in family centers. (Teixeira, Pais-Ribeiro, and Maia n.d.) found that health professionals were underprepared to provide sufficient assistance, including counselling to obesity and overweight patients. Thus, it wasn't easy to approach health providers with such cases. In their study, the authors noted poor knowledge of nutrition, drug use, weight loss, surgical procedures, and available therapies, hindering physicians' learning on treatment and intervention requirements for obesity patients (Jay et al. 2010). For instance, in weight loss, physicians indicated that it was difficult to deal with patients seeking for this service and that their actions were constrained by the feeling of frustrations, setting long-term changes, and a general lack of professional gratification when dealing with such patients. The study noted that 49% of respondents felt prepared to provide some counselling services to weight loss.

(Al-Najjar et al. 2012) observed in their study that a majority of Kuwait physicians were confident about their professional preparedness to manage overweight cases. Nonetheless, only a quarter of the respondents in their survey were prepared to manage obesity in children. This group was found to be susceptible to overweight and obesity in the country. Some of the areas that they noted as critical to their holistic approach to providing services to overweight and obese patients included guidelines and treatment plans that physicians could use when dealing with such patients. Notably, they noted a lack of knowledge on treatment plans and instructions set by the health regulators. Besides, physicians point to a lack of sufficient consultation time, insufficient obesity clinics, lack of training and knowledge, lack of family involvement, and availability of anti-obesity drugs as key factors hindering the provision of counselling and treatment services to obesity patients (Al-Najjar et al. 2012). The authors concluded that the knowledge and attitudes of physicians in Kuwait were at acceptable levels in Kuwait. However, there was a need to improve on these grounds through empowering physicians. Formal training and the establishment of guidelines by the ministry of health on the treatment of obesity and overweight cases could be a way of empowerment (Al-Ghawi and Uauy 2009). preparedness to deal with this issue. For example, the dependence on waist circumference as the primary diagnostic approach did not help identify many obesity and overweight cases in the country (Habib, H.A., Rahaem, Y.A., Al-khalid, Israa Muhyi, M. 2012). Such a plan to diagnose and treat obesity and overweight hindered the weight reduction and management practices in the country. Thus, physicians pointed out a need to have a training course on the diagnostic procedures and the management of such cases in the country. The researchers concluded that family physicians in primary health centres needed to improve their skills and knowledge on the effective ways of managing obesity cases in their patients.

On the other hand, (Smith et al. 2015) found that primary care residents indicated a gap in the self-efficacy, attitudes, and norms and practices in identifying and treating obesity and overweight cases. These factors varied widely between training programs. The (Noor et al. 2020; Smith et al. 2015) suggested that a deeper understanding of training programs associated with physicians' improved performance could help develop interventions that could enhance physicians' ability to provide services to patients with chronic diseases like obesity.

While most family physicians held the view that obesity and overweight were a significant health problem in Saudi Arabia, they did not feel sufficiently knowledgeable about their preparedness to deal with this issue. For example, the dependence on waist circumference as the primary diagnostic approach did not help identify many obesity and

overweight cases in the country (Habib, H.A., Rahaem, Y.A., Al-khalid, Israa Muhyi, M. 2012). Such a plan to diagnose and treat obesity and overweight hindered the weight reduction and management practices in the country. Thus, physicians pointed out a need to have a training course on the diagnostic procedures and the management of such cases in the country. The researchers concluded that family physicians in primary health centres needed to improve their skills and knowledge on the effective ways of managing obesity cases in their patients.

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### Methodology:-

This study is a cross-sectional study to assess the knowledge, attitude and practice of family physicians regarding obesity counseling in family practice centers, cluster one, Riyadh, Saudi Arabia. This data of the study was collected among 130 family medicine physicians using structured self-administered questionnaire which was in English and had four main parts: personal, knowledge, attitude and practice data. Personal data includes age, gender, nationality and marital status. Knowledge about obesity management includes 5 statements assessing knowledge about procedures used in diagnosis of obesity, diseases predisposed to or provoked by obesity and medications predispose to obesity where answers were categorized into (Yes, No). In part three, we assessed the attitudes associated with obesity using 4 statements; analyzing

the attitude about the obesity as major problem, referring obese patient to specialized center, the need to have training courses on obesity or including obesity topic in health education program provided in PHC center. The answers were categorized into (Yes, No). Practicing obesity management was clarified with 4 statements about diagnostic measures, supportive laboratory tests, weight reduction drug prescription, and convenient mean weight loss / week in follow up of obesity management. Answers were categorized into (yes, no). Data was entered, and cleaned using MS Excel and SPSS (Statistical Package of Social Science) version 26 was used for data analysis. Frequency and percent were used for describing of categorical variables.

**Table 1:-** Demographic characteristics of PHC physicians responded to the survey questionnaire (N=130).

Age	<b>25–29</b>	11	8.4
	<b>30–34</b>	19	14.6
	<b>35–39</b>	33	25.3
	<b>40–44</b>	25	19.1
	<b>≥ 45</b>	42	32.6
Gender	<b>Male</b>	70	53.8
	<b>Female</b>	60	46.2
Nationality	<b>Saudi</b>	46	35.4
	<b>Non-Saudi</b>	84	64.6
Marital status	<b>Married</b>	92	70.8%
	<b>Single</b>	30	23.0%
	<b>Divorced</b>	4	3.1%
	<b>Widow</b>	4	3.1%

### Results:-

In this study, we were able to collect data from 130 family medicine physicians. Among the sample, 32.6 % of the participants were older than 45 years old while 25.3 % were between 35-39 years old and 53.8 % of them were males. Moreover, 64.6 % of the participants were non-Saudi and 70.8 % of them were married (Table 1).

Considering the knowledge toward measures of obesity, waist circumference was the main tool in diagnosis of obesity rather than BMI for 97 % of the participants while waist-hip ratio was known for 94.12 % of the participants and 72.35 % of them knew that neck circumference could be used in diagnosis of obesity. Moreover, 98 % of the participants knew that obesity could be predisposed because of polycystic ovaries as well as metabolic syndrome (90.2 %) and Cushing syndrome (84.31 %). Furthermore, 99 % of them knew that hypertension is one of the complications of obesity followed by osteoarthritis (90.2 %) and cancer of colon (88.24 %). Moreover, 99 % of the participants knew that steroid could predispose obesity (Table 2).

**Table 2:-** Knowledge of the primary health care centers physicians regarding obesity.

Obesity can rather than BMI be diagnosed by:	Waist circumference	126	97%
	Waist-hip ratio	122	94.12%
	Neck circumference	94	72.35%
Medical conditions predispose to obesity:	Polycystic ovaries	127	98%
	Metabolic syndrome	117	90.20%
	Cushing syndrome	110	84.31%
Diseases provoked by obesity:	Bhagats disease	103	78.93%
	Osteoarthritis	117	90.20%
	Cancer of colon	115	88.24%
	Hypertension	129	99%
Drugs predispose obesity:	Anti depressant	99	76.48%
	Hypoglycemic	105	80.39%
	Steroid	129	99%

Moreover, we found that 96.08 % of the participants thought that obesity is major problem in Saudi Arabia while 49.02 % thought that it is better to refer obese patients to specialized center. Furthermore, 92.16 % of family medicine physicians thought that they should have a training course in obesity management and 99 % thought that it is better to include obesity topic in health education program (Table 3).

**Table 3:-** Attitude of primary health care centers physicians regarding obesity.

Do you think that obesity is major problem in Saudi Arabia	Yes	125	96.08%
	No	5	3.92%
In PHC, is it better to refer obese individual to a specialized center?	Yes	64	49.02%
	No	66	50.98%
In PHC, is it better to have a training course in obesity management?	Yes	120	92.16%
	No	10	7.84%
In PHC, is it better to include obesity topic in health education program?	Yes	129	99%
	No	1	1.00%

Considering the practice of primary health care physicians regarding obesity, we found that 96.08 % knew that BMI over 30 Kg/m<sup>2</sup> as a measure of obesity diagnosis while 99 % depending on being at weight more than ideal weight for age. Moreover, 100 % of the participants would ask for lipid profile in patients with obesity followed by blood glucose (92.1 %) and hormonal assay (88.24 %). In the following-up, 43.14 % of physicians would consider the loss of mean weight of 500 gm per week as a convenient loss. Moreover, 100 % of the physicians would recommend lifestyle measure to decrease weight of regular physical exercise. (Table 4).

**Table 4:-** practice of primary health care centers physicians regarding obesity.

Physician depends on the following measures to diagnose obesity:	BMI >30 kg/m <sup>2</sup> .	125	96.08%
	Neck circumference>32 cm	82	62.75%
	weight more than the ideal weight for age	129	99%
Physician used to do the following laboratory test to individual with obesity:	Blood glucose	120	92.10%
	Hormonal assay	115	88.24%
	Lipid profile	130	100%
Physician used to prescribe a weight reduction medication when:	BMI >30 kg/m <sup>2</sup>	128	98.31%
	Patient not on diet	94	72.55%
	Patient request	54	41.18 %
In follow up ,the mean weight loss of 500 gm / week is convenient to physician.	Yes	56	43.14 %
Lifestyle measures recommended by the physician to decrease weight:	Decrease time spent watching TV	107	82.35 %
	Food low in calorie, fat and sugar.	125	96.08 %
	Regular physical exercise..	130	100 %

**Discussion:-**

This study aimed to assess the knowledge, attitude, and practice of management of obesity among family medicine physicians that working in family practice centers, Riyadh, Saudi Arabia. This study showed some gaps in the knowledge regarding obesity, especially at the basic knowledge as measuring methods, predisposing factors and complication of obesity. The results showed that nearly thirty percent of the family physicians deny neck circumference as an obesity measure, nearly 16 % of them denied that Cushing syndrome could lead to obesity and 25 % of them did not know that anti-depressant could lead to obesity. These gaps in the knowledge reported in this study are in agreement with several studies that showed that family physicians had incomplete knowledge about the management of obesity and therefore expresses the need for clinical guidelines and need more supplementary training considering the management of obesity as a part of residency and the necessary of continuous medical education training (Flocke et al. 2005; Hayden et al. 2006; Huang et al. 2004; Klumbiene et al. 2006). Moreover, the present study showed that most of physicians reported the internet was the main source of their knowledge considering management of obesity rather than depending on medical books or personal experiences which is opposing the results of a study conducted in Britain that showed that experience, journals and textbooks were the main source of knowledge of physicians considering the management of obesity (Cade and O'Connell 1991) which could explain the found gaps in this study.

In this study, we found that family physicians show positive attitude in considering obesity as major health problem in Saudi Arabia which is consisted with the fact that prevalence of obesity in Saudi Arabia ranged between 28.7 % and 35 % (Al-Nozha et al. 2005; M Alqarni 2016). Moreover, the results of this study showed that the about one half of the family physicians prefer to manage the patients at the PHC center rather than referring obese patients to specialists which considered as a positive attitude of family physicianstoward their role in management of obesity which is similar to the results of other previous studies conducted in Arabic countries as Qatar(Al-Kuwari and Al-Muriakhi 2008), Kuwait(Al-Jeheidli et al. 2007) and Iraq (Alshammari Al-Shammari Yf 2014) as well as some foreign countries as France (Bocquier et al. 2005) and Australia (Campbell et al. 2000).

Moreover, our finding showed that family physicians agreed that it is important to include obesity as significant topic in health education program in order to educate the patients who attend to the PHC center about the obesity, complication and management. Furthermore, most of the family physicians agreed that they need to have training courses about management of obesity during their training which indicate the positive attitude of family physicians to be aware about their need to improve their nutritional knowledge and obesity counseling practice. In previous study conducted among general practitioners, the authors showed that most of the participants reported that it is important to have training on practicing dietary and physical assessment and advice for overweight patients and thought that their role is limited because of having inadequate nutrition knowledge and obesity counseling skills (Nicholas, Pond, and Roberts 2003; Obara, Vivolo, and Alvarenga 2018).

Moreover, our results showed that most of the participants mainly depend on having weight of more than the ideal weight for age or having BMI over 30 kg/m<sup>2</sup> in diagnosis of obesity and using of lipid profile in order to assess the

risk for comorbidities. However, previous study showed that other technique in diagnosis of obesity as waist circumference or the waist: hip ratios are considering useful tools in assessment of abdominal fat accumulation and better correlate with ill health and risk of coronary heart disease (Sack et al. 2009). This indicated that some family physicians could not differentiate between two clinical definitions of overweight and obesity which is comparable with the results of another study which showed that only 40 % of internal medicine residents were able to differentiate the minimum BMI at which patients is considered obese (Block, DeSalvo, and Fisher 2003).

The present study had shown that all the family physician advice on regular exercise and dietary habits as common practice in obesity management compared to three quarter of the instance 80% of GPs in Qatar, 99% in United State, and 90% in Germany (Flocke et al. 2005; Wiesemann 1997).

In conclusion, we found some gaps in the knowledge of family physicians toward management of obesity. Therefore, family physicians working in the primary health centers need to improve their knowledge and skills regarding obesity management.

### References:-

1. Al-Ghawi, Abeer, and Ricardo Uauy. 2009. "Study of the Knowledge, Attitudes and Practices of Physicians towards Obesity Management in Primary Health Care in Bahrain." *Public Health Nutrition* 12(10): 1791–98. [https://www.cambridge.org/core/product/identifier/S1368980008004564/type/journal\\_article](https://www.cambridge.org/core/product/identifier/S1368980008004564/type/journal_article).
2. Al-Jeheidli, AH, Moquddan FI, Al-Rumh MK, and Salmin NN. 2007. "General Practitioners' Attitudes and Practices toward Managing Obesity." *Kuwait Med J* 39: 138–43.
3. Al-Kuwari, Mohamed, and A Al-Muriakhi. 2008. "Primary Care Physicians' Knowledge, Attitude, and Practice toward Obesity Management in Qatar." *Middle East Journal Of Family Medicine* 10: 3.
4. Al-Najjar, Anwar A et al. 2012. "Knowledge and Attitude of Primary Health Care Doctors towards Obesity Management, Kuwait." *Greener Journal of Medical Sciences* 2(5): 120–29. <http://gjournals.org/GJMS/archive/vol-2-5-november-2012/al-najjar-et-al.html>.
5. Al-Nozha, Mansour M et al. 2005. "Obesity in Saudi Arabia." *Saudi medical journal* 26(5): 824–29. <http://www.ncbi.nlm.nih.gov/pubmed/15951877>.
6. Alshammari Al-Shammari Yf, Yousef Fadhel Fahad. 2014. "Attitudes and Practices of Primary Care Physicians in the Management of Overweight and Obesity in Eastern Saudi Arabia." *International journal of health sciences* 8(2): 151–58. <http://www.ncbi.nlm.nih.gov/pubmed/25246882> <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC4166987>.
7. Block, Jason P, Karen B DeSalvo, and William P Fisher. 2003. "Are Physicians Equipped to Address the Obesity Epidemic? Knowledge and Attitudes of Internal Medicine Residents☆." *Preventive Medicine* 36(6): 669–75. <https://linkinghub.elsevier.com/retrieve/pii/S0091743503000550>.
8. Bocquier, Aurélie et al. 2005. "Overweight and Obesity: Knowledge, Attitudes, and Practices of General Practitioners in France." *Obesity Research* 13(4): 787–95. <http://doi.wiley.com/10.1038/oby.2005.89>.
9. Cade, J, and S O'Connell. 1991. "Management of Weight Problems and Obesity: Knowledge, Attitudes and Current Practice of General Practitioners." *The British journal of general practice: the journal of the Royal College of General Practitioners* 41(345): 147–50. <http://www.ncbi.nlm.nih.gov/pubmed/1817470>.
10. Campbell, Karen et al. 2000. "Obesity Management: Australian General Practitioners' Attitudes and Practices." *Obesity Research* 8(6): 459–66. <http://doi.wiley.com/10.1038/oby.2000.57>.
11. Flocke, Susan A, Aaron Clark, Katie Schlessman, and Ginger Pomiecko. 2005. "Exercise, Diet, and Weight Loss Advice in the Family Medicine Outpatient Setting." *Family medicine* 37(6): 415–21. <http://www.ncbi.nlm.nih.gov/pubmed/15933914>.
12. Habib, H.A., Rahaem, Y.A., Al-khalid, Israa Muhyi, M. 2012. "Knowledge , Attitude and Practice Regarding Obesity Management among Family and Non Family Physicians Working in Primary Health Care Centers in Baghdad." *The Iraqi Postgraduate Medical Journal* 11(1): 6–13.
13. Hayden, Melissa J, Leon Piterman, John B Dixon, and Paul E O'Brien. 2006. "Current Teaching about Obesity in Australian Universities, Specialist Medical Colleges and through Continuing Medical Education." *Medical Journal of Australia* 185(5): 293–94. <https://onlinelibrary.wiley.com/doi/abs/10.5694/j.1326-5377.2006.tb00568.x>.
14. Huang, Jian et al. 2004. "Physicians' Weight Loss Counseling in Two Public Hospital Primary Care Clinics." *Academic Medicine* 79(2): 156–61. <http://journals.lww.com/00001888-200402000-00012>.

15. Jay, Melanie et al. 2010. "Physicians' Use of the 5As in Counseling Obese Patients: Is the Quality of Counseling Associated with Patients' Motivation and Intention to Lose Weight?" *BMC Health Services Research* 10(1): 159. <https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-10-159>.
16. Klumbiene, Jurate, Janina Petkeviciene, Vytautas Vaisvalavicius, and Irena Miseviciene. 2006. "Advising Overweight Persons about Diet and Physical Activity in Primary Health Care: Lithuanian Health Behaviour Monitoring Study." *BMC Public Health* 6(1): 30. <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-6-30>.
17. M Alqarni, Saad Salman. 2016. "A Review of Prevalence of Obesity in Saudi Arabia." *Journal of Obesity & Eating Disorders* 02(02). <http://obesity.imedpub.com/a-review-of-prevalence-of-obesity-in-saudi-arabia.php?aid=17699>.
18. Nicholas, Lisa G, C Dimity Pond, and David CK Roberts. 2003. "Dietitian-General Practitioner Interface: A Pilot Study on What Influences the Provision of Effective Nutrition Management." *The American Journal of Clinical Nutrition* 77(4): 1039S-1042S. <https://academic.oup.com/ajcn/article/77/4/1039S/4689792>.
19. Noor, Mohammad et al. 2020. "Physicians' Knowledge, Feelings, Attitudes, and Practices toward Obesity at Family Medicine Setting in Riyadh, Saudi Arabia." *International Journal of Medicine in Developing Countries*: 130-36. <https://www.ejmanager.com/fulltextpdf.php?mno=73374>.
20. Obara, Angélica Almeida, Sandra Roberta Gouvea Ferreira Vivilo, and Marle dos Santos Alvarenga. 2018. "Preconceito Relacionado Ao Peso Na Conduta Nutricional: Um Estudo Com Estudantes de Nutrição." *Cadernos de Saúde Pública* 34(8). [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0102-311X2018000805008&lng=pt&tlng=pt](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2018000805008&lng=pt&tlng=pt).
21. Sack, Suzanne et al. 2009. "Physical Therapists' Attitudes, Knowledge, and Practice Approaches Regarding People Who Are Obese." *Physical Therapy* 89(8): 804-15. <https://academic.oup.com/ptj/article/89/8/804/2737657>.
22. Smith, Samantha et al. 2015. "Primary Care Residents' Knowledge, Attitudes, Self-Efficacy, and Perceived Professional Norms Regarding Obesity, Nutrition, and Physical Activity Counseling." *Journal of Graduate Medical Education* 7(3): 388-94. <https://meridian.allenpress.com/jgme/article/7/3/388/117023/Primary-Care-Residents-Knowledge-Attitudes>.
23. Sussman, A. L. 2006. "The Art and Complexity of Primary Care Clinicians' Preventive Counseling Decisions: Obesity as a Case Study." *The Annals of Family Medicine* 4(4): 327-33. <http://www.annfammed.org/cgi/doi/10.1370/afm.566>.
24. Teixeira, Filipa Valente, José Luis Pais-Ribeiro, and Ângela Rosa Pinho da Costa Maia. "Beliefs and Practices of Healthcare Providers Regarding Obesity: A Systematic Review." *Revista da Associação Médica Brasileira* (1992) 58(2): 254-62. <http://www.ncbi.nlm.nih.gov/pubmed/22569623>.
25. Wiesemann, A. 1997. "Nutritional Counseling in German General Practices: A Holistic Approach." *The American Journal of Clinical Nutrition* 65(6): 1957S-1962S. <https://academic.oup.com/ajcn/article/65/6/1957S/4655630>.