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Research Article

FAMILY MEDICINE RESIDENTS' KNOWLEDGE, ATTITUDES AND SELF-EFFICACY REGARDING OBESITY, NUTRITION, AND PHYSICAL ACTIVITY COUNSELING IN RIYADH CITY, SAUDI ARABIA, 2020

Bodour Saleh AlSalmi¹, Enass Demyati²

¹ KFMC Family Medicine Academy, King Fahad Medical City, Riyadh, Saudi Arabia

² KFMC Family Medicine Academy, King Fahad Medical City, Riyadh, Saudi Arabia

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Abstract:

Background: Overweight and obesity are pandemic public health issues which represent a rapidly growing problems that affect virtually all ages and all socio-economic groups. Family medicine residents are potentially well placed to play a key role in the prevention and management of overweight and obesity as they are first line of defense and contributor to cost-effective in management.

Aim: This study aimed to assess the degree to which residents training in family medicine programs are prepared to provide obesity, nutrition, and physical activity (ONPA) counseling in Riyadh, Saudi Arabia.

Materials and methods

Methods: This is a cross sectional study conducted among family medicine residents from different programs in Riyadh, Saudi Arabia, during the period from 1st of January till 31st December 2020. A self-administered questionnaire was distributed using online platform or by hard copy among the targeted residents. Questionnaire was composed of socio demographic characteristics and ONPA counseling questionnaires. Data were gathered and coded in MS Excel and all statistical analyses were performed using SPSS version 21.

Results: A total of 200 family medicine residents were recruited (Females: 54% vs Males: 46%). The mean ONPA knowledge, attitude, and self-efficacy scores were 46.1, 53.9 and 64.5 out of 100 scale each, respectively. Factors significantly associated with ONPA knowledge were resident level and attending obesity clinic while residency program was the factor associated with ONPA attitude. Likewise, significant factors associated with ONPA self-efficacy were gender and number of obese patients seen per week.

Conclusion: Although the ONPA attitude and self-efficacy of family medicine residents were adequate however, there were gaps being observed in relation to their ONPA knowledge. There is a need to know and to fill the gaps in the knowledge of family medicine residents in our region.

Keywords: ONPA, Family medicine residents, knowledge, attitude, self-efficacy

Corresponding author:

Bodour AlSalmi,

R4 Family Medicine Resident, KFMC Family Medicine Academy

King Fahad Medical City, Address: Riyadh, Saudi Arabia

E-mail address: Bodour.saleh@gmail.com

QR code



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INTRODUCTION:

World Health Organization (WHO) defines overweight as a body mass index (BMI) of 25 to 29.9 kg/m² and obesity as a BMI of ≥ 30 kg/m². [1] Overweight and obesity are pandemic public health issues which represent a rapidly growing problems that affect virtually all ages and all socio-economic groups. [1,2] Obesity become the most common nutritional disorder especially childhood obesity because the developed countries started to adapt the westernized lifestyles and behaviors with excess positive energy imbalance and increasingly sedentary lifestyle [3,4]. Obesity associated with many complications such as hypertension, ischemic heart disease, gallstones, osteoarthritis, type 2 diabetes, sleep apnea, malignancy, [5,6] emotional and social problems in children, impaired quality of life, [6] self-esteem, [7] and depression.[8]

Obesity is the second leading cause of preventable death in the United States of America (USA). [9] Globally, around 2.8 million people die each year as result of overweight and obesity [10]. The worldwide prevalence of obesity nearly tripled between 1975 and 2016. In 2016, WHO reported more than 1.9 billion of adults 18 years and older were overweight and of these over 650 million were obese. In children and adolescents aged 5-19, over 340 million were overweight or obese. [11] It was found that countries with the highest prevalence of overweight were: in the Middle East, Latin America and the Caribbean. [12] In the Middle East region, 45% and 20% of adults suffer from overweight and obesity, respectively. [13]

In Saudi Arabia, the prevalence of overweight and obesity has increased and is one of the highest prevalence rates among other Arab Countries [15]. Obesity in Saudi Arabia is a major cause of concern, where 7 out of 10 people are experiencing this problem [16]. WHO report in 2016 showed that the prevalence of Obesity among Saudi adult more than 18 years is 35.4 % and overweight is 69.7% and among adolescents aged 10-19, prevalence of obesity is 17% [19]. A recent national study conducted in Saudi Arabia in 2013 revealed that the prevalence of obesity was 33.5% among females and 24.1% among males. [18]. In Saudi children from 1 year to 8 years old, in 2002, the prevalence of obesity and overweight was 10.7% and 12.7%, respectively. [20]

Obesity management is one of the most cost-effective interventions. Clinical management guidelines have been formulated with demonstrated the efficacy of different approaches to obesity and its associated comorbidities, including dietary therapy, physical activity, behavior modification, and pharmacotherapy

[21,22]. The primary health care (PHC) system provides the best framework for delivering weight management and physicians have unique professional characteristics which put them in a better position to contribute to the prevention and treatment of obesity [25]. The family practice approach allows physicians to build a rapport, deliver advice and ensure continuity of care, which provides an ideal set-up for behavioral counselling [26]. Physicians are the most frequently used source of health information [26,27] and have been found to be more cost-effective than dietitians in nutritional counselling for obese and other patients [28,29].

Despite these facts, PHC is still underutilized for obesity counselling [21] and its ability is usually limited by a number of limitations, such as short consultation time, patients' low motivation, non-compliance, inadequate teaching materials, lack of reimbursement, low level of physicians' confidence and a shortage of dietitians [30,31]. Inadequate nutrition knowledge has also been reported by physicians themselves or documented objectively [32,33]. In addition, overweight and mild obesity is under-recognized and under-treated unless associated with other medical complications, especially among the pediatric population [34,35,36]. Physicians may hold negative attitudes towards obese patients which could be one of the reasons for the low success rate of obesity management [37,38,39]. Studies showed that adequate training and access to more resources, may increase physician involvement in overweight prevention and treatment. [40,41]

Family medicine (FM) residents are physicians who complete an undergraduate degree, medical school, and are ongoing training for three or four more years of specialized medical residency training in FM. [42] FM residents are potentially well placed to play a key role in the prevention and management of overweight and obesity as they are first line of defense and contributor to cost-effective in management. However, at present only limited information regarding FM residents Knowledge, Attitudes and Self-Efficacy Regarding Obesity, Nutrition, and Physical Activity Counselling is available. We need more details in exploring and understanding these issues to determine how to facilitate the contribution of FM residents to address the epidemic of obesity.

METHODS:**Study design**

This study is cross sectional survey targeted FM residents from different programs in Riyadh, Saudi Arabia, during the period from 1st of January till 31st

December 2020. It aimed to assess the degree to which residents training in FM programs are prepared to provide obesity, nutrition, and physical activity (ONPA) counselling.

Data Collection

This study enrolled 200 FM residents from different residency programs, their participation was voluntary. 70 surveys were collected in person as part of residents' educational presentations day and the rest were distributed through online form.

Questionnaire Criteria

The Questionnaire was validated and was taken from a previous research which was done in Ohio "Primary Care Residents' Knowledge, Attitudes, Self-Efficacy, and Perceived Professional Norms Regarding Obesity, Nutrition, and Physical Activity Counseling" [46]. Demographic data included in the survey were; age group, gender, resident level, residency program, BMI level, approximate number of obese patients seen every week and attended obesity clinic. The indicators of counseling preparedness assessed included Obesity, Nutrition and Physical Activity (ONPA) counseling knowledge and attitudes and self-efficacy toward ONPA counseling. The knowledge about ONPA counseling was measured by presenting 2 case studies with associated 15 questions which is in accordance to the format of the United States Medical Licensing Examination and board examinations. [47] Items centered on obesity risks and recommended assessment and treatment. [9] A knowledge summary score was computed for each respondent by assigning a value of 1 to each correct response, totaling, and transforming to a 0 to 100 scale.

Resident attitudes and self-efficacy regarding ONPA counseling were assessed using 12-item and 9-item, respectively. Items for the attitudes and self-efficacy measures were adapted from scales identified in the literature. [48-51] A 5-Likert scale type format were used for both attitude and self-efficacy, ranging from "strongly disagree" coded as 1 to "strongly agree" coded as 5. Negative questions were reversed accordingly to avoid bias in the scoring. The summary scores were created by summing up the responses and dividing by the number of items completed, then transforming into 0 to 100 scales. The higher the scores the better the optimistic responses.

Statistical Analysis

Data are elaborated with numbers (percentages) for all qualitative variables while mean, standard deviation and median (min-max) were used to elaborate all quantitative variables. The socio demographic characteristics were compared to the mean scores of knowledge, attitude and self-efficacy by mean of Mann Whitney U test or Kruskal Wallis test, whenever appropriate. Normality, statistical interactions, and collinearity (i.e., variance inflation factor) were also assessed with the Kolmogorov-Smirnov and Shapiro Wilk test. Based on normality test, data follows abnormal distribution. Thus, non-parametric tests were applied between comparisons. P-value <0.05 was considered statistically significant. Correlation procedures were also conducted to determine the linear relationship between ONPA counseling domains. All statistical data were analyzed using Statistical Packages for Software Sciences (SPSS) version 21 Armonk, New York, IBM Corporation

RESULTS:**Table 1: Socio Demographic Characteristics of Residents (n=200)**

Study variables	N (%)
Age group	
• 25 – 27 years	94 (47.0%)
• >27 years	106 (53.0%)
Gender	
• Male	92 (46.0%)
• Female	108 (54.0%)
Resident level	
• Level 1	45 (22.5%)
• Level 2	48 (24.0%)
• Level 3	64 (32.0%)
• Level 4	43 (21.5%)
Residency program	
• King Fahad Medical City	77 (38.5%)
• King Saud Medical City	51 (25.5%)
• King Saud University City	12 (06.0%)
• Security Force Hospital	06 (03.0%)
• Prince Sultan Military Medical City	15 (07.5%)
• National Guard Hospital	25 (12.5%)
• Prince Mohammed bin Abdulaziz Hospital	10 (05.0%)
• King Faisal Specialist Hospital	04 (02.0%)
BMI Level	
• Normal	87 (43.5%)
• Overweight	94 (47.0%)
• Obese	19 (09.5%)
Approximately, how many obese patients have seen per week	
• <5	27 (13.5%)
• 5 – 10	84 (42.0%)
• >10	89 (44.5%)
Did you attend any obesity clinic	
• Yes	53 (26.5%)
• No	147 (73.5%)

This study enrolled 200 FM residents to evaluate their knowledge, attitudes and self-efficacy regarding obesity, nutrition and physical activity counseling. Table 1 shows the socio demographic characteristics of the residents. More than half (53%) were in the older age group (>27 years) and 54% were females. With regards to residents' level, 32% were level 3, 24% were level 2 and the rest were either level 1 (22.5%) or level 4 (21.5%). In relation to residency program, 38.5% were undergoing their residency at King Fahad Medical City while 25.5% of them at King Saudi Medical City. With respect to their BMI, 47% were overweight, 43.5% were normal while 9.5% were obese. When asked how many obese patients were seen per week, 44.5% indicated more than 10, others said 5 – 10 (42%) or less than 5 (13.5%). The percentage of residents who attended obesity clinic was 26.5%.

Table 2: Summary score of Obesity, Nutrition and Physical Activity (ONPA) Counseling (n=200)

ONPA Domain	No. of items	Mean	SD	Min	Max	Item Reliability
Knowledge	15	46.1	20.3	13.3	100	0.705
Attitude	12	53.9	11.3	35.0	86.7	0.743
Self-Efficacy	09	64.5	15.3	20.0	100	0.923

The summary score of obesity, nutrition and physical activity (ONPA) counseling has been described at table 2. Based on the results, the mean ONPA knowledge score was 46.1 (SD 20.3) out of 100 scale while the mean ONPA attitude score was 53.9 (SD 11.3) out of 100 scale. For ONPA self-efficacy, the mean score was 64.5 (SD 15.3) out of 100 scale. With regards to reliability analysis, ONPA self-efficacy has the highest internal consistency with 0.923 Cronbach Alpha, followed by ONPA attitude (Cronbach Alpha: 0.743) and the least was ONPA knowledge (Cronbach Alpha: 0.705).

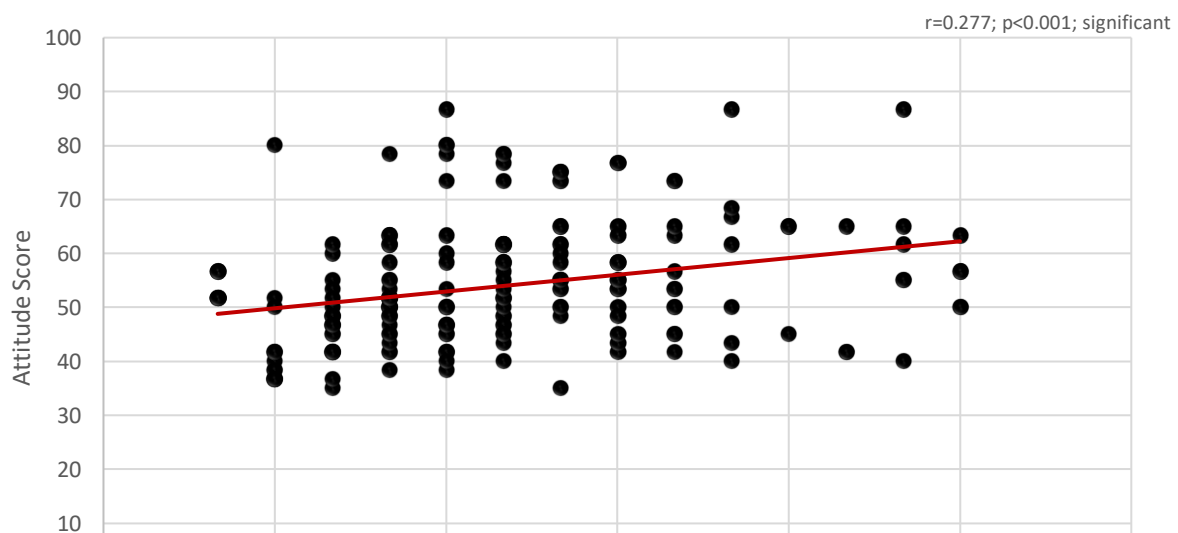
Figure 1: Correlation (Pearson – r) between the ONPA knowledge and ONPA attitude score

Figure 1 showed the correlation procedure between the ONPA knowledge and ONPA attitude score. It was found that the correlation between ONPA knowledge and ONPA attitude score was positively highly statistically significant ($r=0.277$; $p<0.001$). Indicating that while the ONPA knowledge score increase the ONPA attitude score will also likely to increase.

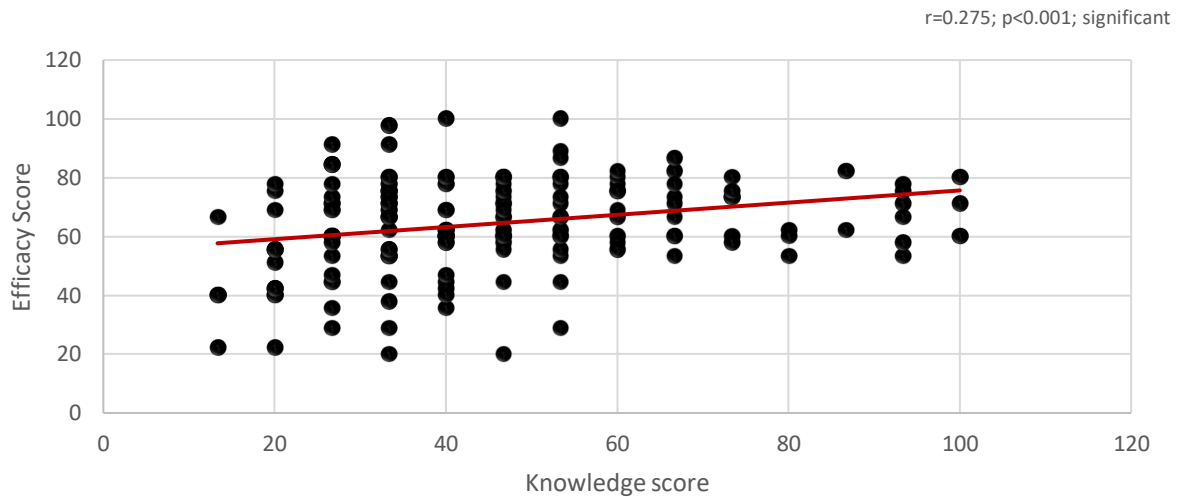
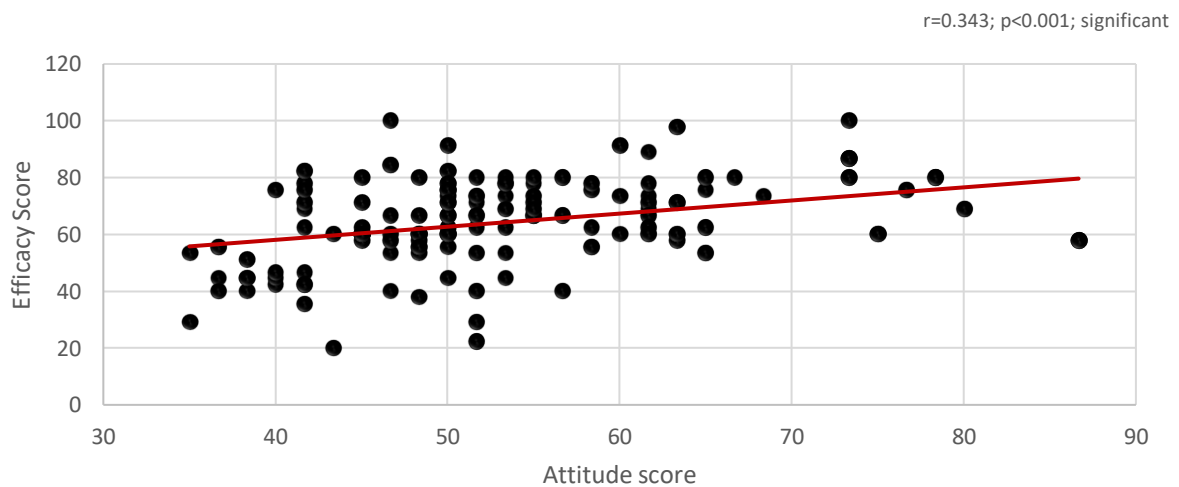
Figure 2: Correlation (Pearson – r) between the ONPA Knowledge and ONPA Self-Efficacy score

Figure 2 depicted that correlation between the ONPA knowledge and ONPA self-efficacy score. It was revealed that the correlation between ONPA knowledge and ONPA self-efficacy score was positively statistically significantly ($r=0.275$; $p<0.001$) which suggests that the increase of ONPA knowledge score is also the increase of ONPA self-efficacy score.

Figure 3: Correlation (Pearson – r) between the ONPA Attitude and ONPA Self-Efficacy score

In figure 3, the correlation between ONPA attitude and ONPA self-efficacy score was positively highly statistically significant ($r=0.343$; $p<0.001$) which indicates that increasing ONPA attitude was correlated with the increase of ONPA self-efficacy.

Table 3: Statistical association between Obesity, Nutrition and Physical Activity (ONPA) counseling and the basic demographic data of the residents (n=200)

Factor	Knowledge Score Mean \pm SD	Attitude Score Mean \pm SD	Self-Efficacy Score Mean \pm SD
Age group ^a			
• 25 – 27 years	44.3 \pm 18.2	54.5 \pm 11.8	64.8 \pm 12.0
• >27 years	47.6 \pm 21.9	53.4 \pm 10.9	64.3 \pm 17.7
T-test	-1.144	0.686	0.239
P-value	0.409	0.466	0.956
Gender ^a			
• Male	48.0 \pm 21.6	53.6 \pm 10.2	66.4 \pm 16.7
• Female	44.4 \pm 19.1	54.1 \pm 12.3	62.9 \pm 13.8
T-test	1.275	-2.99	1.588
P-value	0.190	0.726	0.042 **
Resident level ^b			
• Level 1	40.6 \pm 7.1	53.1 \pm 10.9	63.3 \pm 16.7
• Level 2	48.1 \pm 17.4	55.1 \pm 12.0	63.3 \pm 12.8
• Level 3	41.9 \pm 20.0	53.7 \pm 11.7	63.5 \pm 15.8
• Level 4	55.7 \pm 23.4	53.6 \pm 10.6	68.5 \pm 15.3
F-test	5.701	0.249	1.242
P-value	0.002 **	0.905	0.380
Residency program ^b			
• King Fahad Medical City	47.4 \pm 18.3	52.4 \pm 7.51	66.5 \pm 14.5
• King Saud Medical City	47.2 \pm 20.8	59.7 \pm 14.3	62.8 \pm 11.5
• Other Hospital	43.9 \pm 21.9	51.3 \pm 11.1	63.6 \pm 18.2
F-test	0.648	10.170	1.071
P-value	0.228	0.001 **	0.112
BMI Level ^b			
• Normal	46.4 \pm 18.5	52.1 \pm 9.41	65.7 \pm 13.8
• Overweight	46.4 \pm 22.3	55.7 \pm 12.6	63.9 \pm 16.1
• Obese	42.8 \pm 18.2	53.1 \pm 12.3	61.9 \pm 18.1
F-test	0.270	2.391	0.629
P-value	0.743	0.215	0.900
Number of obese seen per week ^b			
• <5	40.0 \pm 16.4	51.0 \pm 8.95	56.6 \pm 17.7
• 5 – 10	46.0 \pm 19.6	54.9 \pm 11.8	67.1 \pm 12.9
• >10	47.9 \pm 21.7	53.8 \pm 11.5	64.4 \pm 15.9
F-test	1.598	1.202	5.009
P-value	0.488	0.379	0.008 **
Attended any obesity clinic ^a			
• Yes	54.2 \pm 24.3	55.6 \pm 10.6	67.3 \pm 14.9
• No	43.1 \pm 17.8	53.3 \pm 11.6	63.5 \pm 15.3
T-test	3.508	1.286	1.582
P-value	0.004 **	0.080	0.159

^a P-value has been calculated using Mann Whitney U test.

^b P-value has been calculated using Kruskal Wallis test.

** Significant at p<0.05 level.

In Table 3 we measured the association between the ONPA counseling and the basic demographic characteristics of family residents. It was found that male residents (T=1.588; p=0.042) showed significantly higher ONPA self-efficacy score than female. We also found that level 4 residents (F=5.701; p=0.002) and those who attended obesity clinic (T=3.508; p=0.004) exhibited significantly higher ONPA knowledge score than other residents. Furthermore, those who were working at King Saud Medical City were observed to have significantly better ONPA attitude score compared to others who didn't work their (F=10.170; p=0.001). On the other hand, those who had seen less than 5

obese patients per week exhibited significantly lower ONPA self-efficacy score ($F=5.009$; $p=0.008$). Other socio demographic characteristics of family residents such as age group and BMI level did not show significant association when compared to ONPA counseling domains ($p>0.05$).

DISCUSSION:

The present study carried out to assess the ONPA knowledge, attitude and self-efficacy among FM residents in Riyadh, Saudi Arabia. It showed that there was insufficient ONPA knowledge among FM residents. The mean ONPA knowledge score was 46.1 (SD 20.3) out of 100 scales and this is consistent with the studies of Smith et al.^[46] and Block et al.^[51] as they reported that the ONPA knowledge of their residents were lacking. While in Makkah, Saudi Arabia, reports indicated that FM residents had better level of knowledge regarding obesity management as more than half of the residents exhibited good level of knowledge with the highest rate among level 2 residents.^[52] As a result, there is a need to improve the knowledge of recommended ONPA counseling guidelines and techniques in our family medicine residency programs and we may benefit from other programs, like the ones on Makkah [52] to improve our training in overweight and obesity.

Furthermore, we noted that resident level was one of the factors associated with ONPA knowledge, where level 4 residents exhibited highest ONPA knowledge score while level 3 residents exhibited the lowest score. These results are going with Alsaati and Almasaodi study.^[52] They documented that the knowledge regarding obesity management was highest among level 2 residents and lowest among level 1 residents. This observation is expected, as it confirmed that the knowledge of the senior residents will be more as their exposure to patients and getting training on them well increased with years.

We determined that residents who attended obesity clinic, exhibited significantly higher ONPA knowledge score than other residents. As a result, may be adding a rotation at a well-designed obesity clinic to the residency curriculum may help in improving residents ONPA knowledge.

In the assessment of ONPA attitude, our study revealed that there was a moderate ONPA attitude being perceived among FM residents as the mean ONPA attitude score was 53.9 (SD 11.3) out of 100 scales. This finding is similar to Smith et al study^[43] as they found out that the mean ONPA attitude score of primary care residents was 54.8 (SD 13.9). A study published in Saudi Arabia,^[52] showed similar findings with more than a half of FM residents exhibited positive attitude toward obesity management. On the contrary, in the narrative of Block et al.^[51], internal medicine residents reported to have negative attitude

toward obesity treatment and expressed negative opinions related to their skills for treating patients associated with obesity. When determining the factors associated with ONPA attitude, our investigation revealed that residency program was the only factor associated with ONPA attitude. Those residency programs may have rotations at well-designed obesity clinic (as the case at King Saud and King Fahad Medical Cities) and as a result, they have significantly better ONPA attitude score compared to others. This report is comparable to Antonogli et al study,^[54] which showed that primary care residents in their elective rotations that focused on ONPA were positively associated with attitude. On the other hand, Alsaati and Almasaodi,^[52] indicated that increasing residency level and years of experience were associated with increased attitude. Davis et al.^[55] noted that the attitude of residents toward obesity treatment varied by residents' level where they further noted that third year residents reported greater feelings of negativity towards obese patients. In contrast to our study where level of residents did not show significant influence on ONPA attitude.

In the assessment of ONPA self-efficacy, the mean ONPA self-efficacy score was 64.5 (SD 15.3) out of 100 scales which was deemed adequate. This result is slightly higher than Smith et al study^[43], where the mean was 51.7 (SD 16.5) out of 100 scales and this suggest that residents adequately feel confident in their ability to perform basic ONPA counseling tasks. We also noted that gender was the factor associated with ONPA self-efficacy where females exhibited significantly lower ONPA self-efficacy score than males. Smith et al. study [46] showed similar results. Maybe we need to have more studies to exhibit the causes of lower ONPA self-efficacy in females. Likewise, residents who have seen a smaller number of obese patients, have exhibited lowest ONPA self-efficacy score and this explained by the more the exposure to patients, the more the experience.

Another important finding of this study was the linear agreement between ONPA counseling domains (knowledge, attitude and self-efficacy). In this study, we found positive correlations between the ONPA knowledge, attitude and self-efficacy. Suggesting that the increased of ONPA knowledge was associated with the increased of ONPA attitude and self-efficacy and vice versa. However, in United States,^[51,53] authors reported that there was no correlation between the knowledge and attitude as well as self-perceived

proficiency. This difference could be related to multiple factors as study designs, different population and etc.

In addition, if FM residents are expected to address ONPA with their patients, training programs may need some modification. Examination of current curricula and critical reflection on the culture and attitudes maintained by program faculty and preceptors both are warranted.[46]

CONCULOSIN:

Although the ONPA attitude and self-efficacy of FM residents were adequate, there were gaps being observed in relation to their ONPA knowledge. The findings of this study suggest that there is a need to address the gaps in ONPA knowledge and to address the necessity to attend obesity clinics as it increased residents' knowledge. More emphasis and training are needed to enhance FM resident's competencies and skills in order to deliver effective ONPA counseling among overweight and obese patients and to prevent the health risks associated with them.

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