

Complementary and Alternative Modalities; A new vein in weight control and reduction interventions. A pilot study in Jordan

MAYADAH B., SHEHADEH, GHADEER A.R.Y. SUAIFAN

Department of Pharmaceutical Sciences

RULA M. DARWISH

Department of Pharmaceutics and Pharmaceutical Technology

Faculty of Pharmacy, The University of Jordan

Queen Rania St, Amman 11942

JORDAN

m.shehadeh@ju.edu.jo <http://academic.ju.edu.jo/m.shehadeh/default.aspx>

Abstract: - Association of obesity with life-threatening diseases has been well documented in literature. Currently, obesity is on the rise both in developed and developing countries. This study investigated the prevalence of complementary and alternative medicine (CAM) use for weight management. Cross-sectional survey was used. Data were collected from 1388 adults living in Jordan. The overall use of CAM among participants within the past year was explored. Association between participants' body mass index and CAM utilization was also investigated. The response rate was 93.3 %. Forty-nine percent of the participants were overweight or obese. Almost half of the participants had tried to manage their weight in the past 12 months. Out of which, 72.6 % used at least one form of CAM modalities. Herbal dietary supplements were reported to be convenient for overweight and obese elderly. Green tea was the most commonly used herbal supplement, based on relatives' advice. Obese participants were more likely to use CAM in combination with conventional methods to manage their body weight. This concomitant use may increase the risk of serious adverse effects. Therefore, evidence-based studies of CAM efficacy, adverse effects and potential drug-herb interactions should be examined in future studies.

Key-Words: - Dietary supplements; herbal medicine; CAM; weight control; adults; Jordan.

1 Introduction

Obesity is a major health problem both in the developed and developing countries. In the United States, obesity is considered the second-leading cause of preventable death [1-3]. Numerous studies have verified the association of obesity with chronic life-threatening health problems such as coronary heart disease (CHD), hypertension, hyperlipidemia, diabetes mellitus, psychological disorders and cancer [4-7].

The prevalence of obesity differs from one country to another and varies by gender, age educational attainment, annual household income, employment status and social class [8-12]. According to the recent World Health Organization report (2015), the highest prevalence of overweight among adults (over 18 years old) was in the United States of America (67.3%) and Europe (58.6%). Whereas, South East Asia has the lowest obesity prevalence at (22.2%). In the Middle East countries, few studies

provided estimates of obesity [12]. Findings from the Behavioral Risk Factor Surveillance System established by Jordan Ministry of Health (MOH) and in collaboration with the Centers for Disease Control and Prevention revealed an 8.6% increase in obesity among the public over a time period of ten years [6,13,14]. Moreover, Jordan MOH mortality statistics illustrated that 38.2% of deaths were attributed to obesity-associated cardiovascular diseases [6].

Compliance with conventional medical treatments for obesity is notoriously poor, and a plethora of over-the-counter slimming aids are sold with claims of effectiveness leading to higher health-care costs [14-20]. At present, individuals with obesity are seeking alternative forms of health care for weight management [21]. In 1995, alternative modalities were defined by the National Center for alternative medicine as "treatments and healthcare practices not taught widely in medical schools, not generally used

in hospitals and not usually reimbursed by medical insurance companies”[22-23].

Literature review highlighted the worldwide elevation of complementary and alternative modalities (CAM) utilization, including plant-based medicines and dietary supplements to cope with and/or to control chronic diseases [21, 24]. The surge in CAM use has urged researchers to conduct population-based studies in different countries including Australia; UK; Taiwan; and the United States of America [25-28]. These studies reported the use of CAM by one-half to two-thirds of adult respondents. In 2007, a total of \$33.9 billion was spent on CAM modalities in the United States of America alone, of which \$22 billion on CAM products and 11.9 billion on practitioner visits [29]. The current study was designed to provide insights into the pragmatic status of CAM use among adults in Jordan. It was structured to explore the prevalence of CAM products utilization as a weight control or reduction intervention among a sample of normal, overweight and obese adults and to examine any possible association between BMI with such use.

2 Methodology

2.1 Study population and study tool

The questionnaire was structured to include common modalities traditionally used in Jordan and was approved by an expert panel consisting of two nutritionists, three pharmacists and a statistician. The survey was written in English then translated into Arabic and back to English. Back translation was undertaken by a bilingual speaker to ensure translation validity. All feedback received was incorporated into the final version of the questionnaire.

A face-to-face anonymous structured questionnaire was administered to one thousand five hundred adults (anybody who appeared to be 18 years old or above) after obtaining oral informed consent to participate in the study. The study was carried out in different community settings to ensure sample representativeness (five health care centers, five shopping malls, ten supermarkets, The University of Jordan main cafeteria, three fitness and ten female beauty centers).

Personal interview survey took place during week days at different time intervals and included both genders of different age groups for generalizability. The interviews were conducted by fifth-year pharmacy students trained by the authors. No financial incentive was offered. The average

interview time was 20-30 minutes. Data were collected between February and June 2015.

This study was approved by the Scientific Research Committee at the Faculty of Pharmacy and The University of Jordan and the Institutional Review Board (IRB) of Jordan University Hospital.

Respondents were categorized into internationally defined body mass index (BMI) categories: (i) normal weigh (18.5 to < 25kg/m²); (ii) overweight (25.0 to < 30kg/m²); (iii) mildly obese (30 to <35kg/m²); (iv) moderately obese (35 to <40kg/m²); and (v) extremely obese (≥40kg/m²).

2.2 Data analysis

Data were coded, entered and analyzed using Statistical Package for Social Sciences program (SPSS) database for Windows, version 17. The analysis involved descriptive quantitative statistics e.g. frequency and percentage. Chi-square and Fisher exact tests were used to test the significant association between BMI categories and other variables ($p < 0.05$).

3 Result and Discussion

A total of 1500 questionnaires were administered to the participants by the interviewers. The response rate was 93.3%. Under-weight respondents with a BMI value below 18.5 (4.4 %) were excluded from data analysis. Table 1 summarizes the demographical characteristics of the study sample. Sixteen percent (16.1 %, 95% CI 10.0% to 22.2%) of the study sample complains from one or more chronic pathological disease(s), of which 53.5 % (95% CI 47.3% to 59.8%) used CAM modalities. Participants with high BMI were more likely to use CAM to treat the chronic disease ($P < 0.001$), since forty-one percent (40.9%, 95% CI 29.9% to 51.9%) of the obese (mild, moderate and extreme) and 44.3% (95% CI 34.0% to 54.6%) of the overweight, compared to 14.8% of the normal-weight reported such use. Moreover, CAM utilization was higher among the chronically ill elderly (> 45 years old) overweight and obese participants. The relation between different CAM modalities utilization and respondents BMI categories was diverse as illustrated in Figure 1.

Green tea was commonly used by normal weight participants whereas, apple cider and garslim tablets were the most common alternative modalities used by extremely obese as shown in Figure 2.

Older obese individuals were more likely to use herbal dietary supplements as revealed by this study. One potential explanation of such practice, that dietary supplements do not involve the addition of

medications – an important consideration in older obese individuals who are often already taking several medications. Moreover, it is more convenient for overweight and obese elderly to take supplements to control or decrease their weight rather than to comply with the steps involved in diet.

Table 1 Demographic characteristics of subjects participating in the study, Amman, Jordan Summer 2013 (N=1338).

| | Number | Percentage |
|--|--------|------------|
| Gender (N= 1337)[†] | | |
| Male | 537 | 40.2 |
| Female | 800 | 59.8 |
| Age (N= 1331)[†] | | |
| 18-25 | 603 | 45.3 |
| 26-30 | 159 | 11.9 |
| 31-35 | 133 | 10.0 |
| 36-40 | 103 | 7.7 |
| 41-45 | 106 | 8.0 |
| over 46 | 227 | 17.1 |
| Income / month JD[‡] (N= 1306) | | |
| Less than 500 JD | 255 | 19.5 |
| 500-1500 JD | 668 | 51.1 |
| More than 1500 JD | 383 | 29.3 |
| Marital status (N= 1336)[†] | | |
| Single | 688 | 51.5 |
| Married | 590 | 44.2 |
| Divorced | 28 | 2.1 |
| Widowed | 30 | 2.2 |
| Education (N= 1313)[†] | | |
| Primary school | 46 | 3.5 |
| High school | 176 | 13.4 |
| Community college | 163 | 12.4 |
| Undergraduate | 794 | 60.4 |
| Postgraduate | 134 | 10.2 |
| Occupation (N= 1323)[†] | | |
| School student | 33 | 2.5 |
| University student | 461 | 34.8 |
| Business owner | 100 | 7.6 |
| Employee at a private sector | 204 | 15.4 |
| Employee at a public sector | 246 | 18.6 |
| Housewife | 187 | 14.1 |
| Retired | 38 | 2.9 |
| Unemployed | 40 | 3.0 |
| Other | 14 | 1.1 |
| Residency (N= 1319)[†] | | |
| Amman | 1039 | 78.8 |
| All other cities | 280 | 21.2 |
| Nationally (N= 1304)[†] | | |
| Jordanian | 1171 | 89.8 |
| Not Jordanian | 133 | 10.2 |
| BMI (N=1338)[†] | | |
| Normal | 665 | 49.7 |
| Overweight | 447 | 33.4 |
| Mildly obese | 164 | 12.3 |

[†]Total number <1388 due to unanswered questions/missing data.

[‡]Jordanian Dinar (JD 0.71 =USD 1.0).

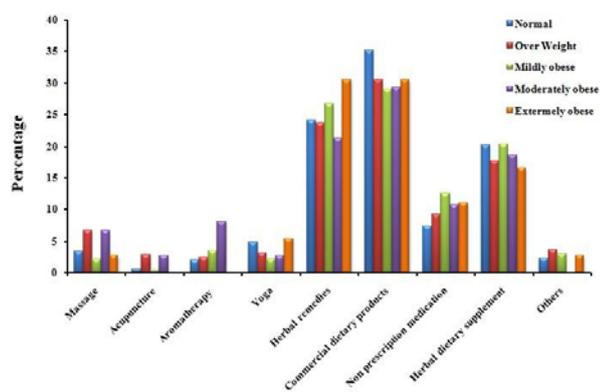


Fig. 1 Respondents using complementary and alternative modalities to reduce or control their weight (n = 211), type used by weight category

Cinnamon and ginger use was lowest among participants with moderate obesity while fat metabolizer, green tea and fiber or bran was

more common. Furthermore, slim fast powder and senna leaves were more prevalent in participants with extreme obesity. However, they were less familiar in normal and moderate obesity participants. Mardaquoosh (marjoram in English) was a prevalent module for weight reduction in overweight and mildly obese individuals when compared to other BMI categorize participants.

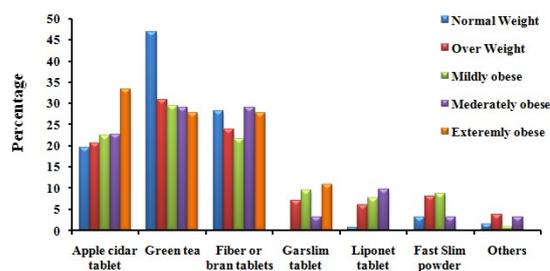


Fig. 2 Respondents using herbal dietary supplements to reduce or control their weight (n = 272), type used by weight category

The prevalence of senna by extremely obese participants could be supported by its cathartic or purgative effect [30-32]. Our study revealed that the main source for herbal dietary products and herbal remedies was relatives (44.4 % and 56.9 %, respectively), followed by Attar (23.4 % and 27.3 %, respectively), pharmacists (22.0 % and 21.0%, respectively), nutritionists (16.9 % and 17.8 %, respectively), health food stores (10.5 % and 11.3 %, respectively), physicians (13.4 % and 12.5 %, respectively) and others (14.6 % and 9.9 %, respectively). The low disclosure rates by physicians may be attributed to their concern of drug-herb interaction potential adverse events, especially in elderly obese adults, since they are more likely to use alternative modalities in combination with conventional medications. Also, it is possible that participants avoided discussions about alternative modalities use with clinicians because of their fear from clinicians' criticism. Green tea remarkably exhibited the most common herbal dietary remedies based on relative advice. The usefulness of green tea may be supported by Chantre *et al*⁴² study where 70 participants aged between 20-69 (BMI 24-32) consumed two capsules of green tea extract (270 mg EGCG; 475 mg total catechins) while dieting for three months and lost an average of 4.6-percent of their body

weight. Moreover, Kovacs *et al.*, 2004 examined the effect of using green tea extracts in weight maintenance after loss and found that participants experienced a 13 % less weight regain when compared to placebo[33].

The current study showed that more than half of the participants with chronic diseases agreed that the use of herbal dietary products and herbal remedies, 56.1 % and 56.8 % respectively, assist their weight control or reduction.

Participants' believed that alternative modalities are safe in general, but not in pregnancy and lactation. Almost two thirds of the obese participants (67.9 %, 95 %CI 65.3% to 70.6%) disagreed or didn't know about possible alternative modalities-drug interaction. This high rate is concerning, since obese participants are somewhat more likely to use alternative modalities in combination with conventional medical treatments, and thus may be at a greater risk for potential herb-drug adverse interactions.

There are several limitations to our study. First, our ability to determine causality was limited. Second, self-reporting methodology may have led to error or misclassification. Third, given the low number of participants with moderate and extreme obesity, we were likely underpowered to detect differences among obese categories.

4 Conclusion

This study showed that weight control or reduction could be attained by a variety of alternative modalities. Effectiveness of some alternative modalities could help stem the increasing obesity epidemic. However, the poor knowledge of possible alternative modalities-drug interaction is concerning and thus necessitates further research of this phenomenon.

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