Sudanese Family Doctor’s Lifestyle and its Influence on Their Practice in Khartoum State, Sudan (2017)

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A Dissertation
Submitted to University of Gezira in Partial Fulfillment of the Requirements for the Award of the degree of Master of Science

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Department of Family and Community Medicine
Faculty of Medicine
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Sudanese Family Doctor’s Lifestyle and its Influence on Their Practice in Khartoum State, Sudan (2017)

Walla Abuobeida Ibrahim Elbagari

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Date: / / 2018
Sudanese Family Doctor’s Lifestyle and its Influence on Their Practice in Khartoum State, Sudan (2017)

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Date of Exam: / / 2018
الآية
Dedication

For all those times you stood by me,

I’ll be forever thankful…

To my parents

Who put me in the right way

To my husband

Who supported me every time

To my professors

Who paved the way for this work

To my brothers & sisters

Who were helping me every time

To my friends

Who were always friends in need
Acknowledgment

May Almighty Allah has given me the faith, strength, and patience to finalize this study.

I am very much indebted to my supervisor Dr. Osman Hamid, MRCGP, MSC, CIC, DTM&H, who has been so kind and very patient throughout the course of this study till it comes up the way it is now.

Prof. Sedig Shaheen, a statistics expert at the University of Khartoum who helped me in structuring the sampling frame. I wish to extend my thanks and gratitude to Postgraduate studies college staffs at Gezeria University who were always available to provide guidance and advice whenever needed. Sincere gratitude is to my parents; may Almighty Allah keep them healthy and blessed forever. They have always been there to encourage and support me and pave my academic path. Thanks are extended to my kind family represented in my dear hubby, the fruits of my womb and my beloved sisters who have provided me with the necessary help and encouragement.
Sudanese Family Doctor’s Lifestyle and its Influence on Their Practice in Khartoum State, Sudan (2017)

Walla Abuobeida Ibrahim

Abstract
The healthy lifestyle adopted by the family doctors in Khartoum state is studied to find out its relationship with their counseling to patients regarding the smoking, dietary habits, exercise, and stress. Since the family doctors are leading an important role as a primary health doctor, it is important to highlight their health and its effect on their practice. A cross-sectional study, conducted in two localities in Khartoum state, a questionnaire is distributed in family medicine health centers, the respondents were 108, most of them were females (n 85), while the males were only 23. The data were analyzed using SPSS version 24. The results regarding smoking were 4%, while non-smokers were the majority, the perceived stress level of 5/10 scale was 22%, exercise 1 to 2 times a week were 43% while inactive was 35%. Regarding the healthy diet, around 41% were having an unhealthy diet, the overweight the majority by 54%. Majority of doctors believe that their health is good; however, 34% said it is fair. In conclusion, the family doctors have poor dietary habits and high BMI, but still, they do their job in counseling their patient regardless their health status; doctors do not practice what they preach. More policies should be done in a primary healthcare setting in order to promote the family doctors healthy lifestyle habits.
أسلوب الحياة التي يتبعها أطباء الأسرة السودانيين وتأثيرها في ممارساتهم الطبية فيما يتعلق بأسلوب الحياة الصحية في ولاية الخرطوم، 2017

ولاء ابوعيدة ابراهيم البقاري

ملخص الدراسة

تمت دراسة نمط الحياة الصحي لدى أطباء الأسرة في ولاية الخرطوم لمعرفة علاقتها مع تقديم المشورة لمرضائهم بشأن التدخين، والعادات الغذائية، وممارسة الرياضة، والضغط النفسي. وما أن طبيب الأسرة يؤدي دوراً مهماً كطبيب الرعاية الصحية الأولية، فمن المهم إبراز صحتهم وتأثيرها على ممارستهم لمهنتهم. تم إجراء دراسة مقطعية أجريت في محلتين في ولاية الخرطوم، وتم توزيع استبيان في مراكز صحة طب الأسرة، وكان المجيبون 108، معظمهم من الإناث (85)، في حين كان الذكور فقط 23. تم تحليل البيانات باستخدام الحزمة الإحصائية للعلوم الاجتماعية 24 - وكانت النتائج المتعلقة بالتدخين 4 بالمائة، بينما كان غير المدخنين هم الأغلبية، وكان مستوى الضغط النفسي 5/10 مقياساً 22 في المائة، وممارسة الرياضة من مرة إلى مرتين في الأسبوع بنسبة 43 بالمائة، بينما كانت الفئة غير النشطة 35 بالمائة. وفيما يتعلق باللifestyle الغذائي الصحي، كان حوالي 41% يعانون من نظام غذائي غير صحي، وكان أصحاب الوزن الزائد أكثر من 54٪، بالإضافة للأطباء الذين يعانون من السمنة المفرطة. غالبية الأطباء يعتقدون أنهم بصحة جيدة؛ بينما، 34٪ منهم يقولون أنهم بخير. وتخلص النتائج النهائية إلى أن أطباء الأسرة لديهم عادات غذائية غير صحية ومؤشر كتلة الجسم لديهم مرتفع، ولكنهم لا يزالون يقومون بعملهم في تقديم المشورة والنصح.
للمرض بغض النظر عن حالتهم الصحية؛ أطباء الأسرة يفعلون عكس ما ينصحون به مرضهم.

لذلك ينبغي وضع المزيد من السياسات في مجال الرعاية الصحية الأولية من أجل تعزيز عادات نمط الحياة الصحية لدى أطباء الأسرة.
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Chapter One

Introduction

The healthy lifestyle term is describing the way that you live your life in a healthy style, in order to avoid diseases, however not all diseases are preventable but can decrease the deaths from it (WHO, 1999). According to the WHO, Health is not only just about avoiding disease, it is also about physical, mental and social well-being. If one person adopted a healthy lifestyle, this will provide more positive role model to other family members, especially children. Scientific studies have identified certain types of behavior that contribute to the development of non-communicable diseases and early death (WHO, 1999).

Healthy lifestyle concept is widely inclusive of different behaviors, which are Proper diet, Physical exercise, Proper sleeping pattern, Personal hygiene, Absence of bad habits or addiction, Health education, Safe environment, Physical fitness, Love through social support and healthy relationships, and Emotions (WHO, 2005). Data estimated from Irish study showed that doctors are more tending to neglect their health due to work nature, and workload (Feeney et al., 2016), the study also suggested addressing the culture of self-treatment and poor health behaviors through undergraduate and postgraduate education. Different studies concerned about the doctors' healthy lifestyle, most of it showed some decline in specific lifestyle and its effect on their health and patient counseling (Vickers et al., 2007)(Aghaji, 2000; Wada et al., 2011; Saif M. Borganet et al., 2015).

By adopting healthy lifestyle habits, physicians play a key role in helping their patients to adopt healthy lifestyles for primary prevention of chronic diseases (Oberg and Frank, 2009). Indeed, GPs in the UK report spending an average 16% of practice time on prevention, and 79% report educating patients about lifestyle risk ‘most’ or ‘all of the time’. Most inquiries and interventions related to smoking behavior (McAvoy et al., 1999). Only 15.7% of office visits, in the United States, to primary care providers included health counseling on diet, physical activity or stress reduction (Ma et al., 2004). So man barriers are potentially contributing to this low percent, one identified barrier to
greater health promotion counseling is that providers report difficulty counseling patients on behaviors that they struggle with themselves (Vickers et al., 2007). Combined with the other main barrier that UK GPs report – a lack of time(Douglas et al., 2006). It was recently determined that the average primary care provider would need 7.4 hours of each day in order to meet all the preventive services' recommendations for all patients – exclusive of health promotion counseling for chronic disease states(Yarnall et al., 2003). Clearly, GPs will struggle to provide optimal care, unless additional changes to the healthcare delivery system are made.

**Problem statement**

The health of general practitioners (GPs) is important because patients consider them as healthy role models, and because when practice the healthy lifestyle habits them, so they are more likely to counsel their patients about health behavior change. Moreover, one of the strongest predictors of health promotion counseling by primary care physicians is practicing a healthful behavior oneself – it is clear that many physicians report difficulty counseling patients about behaviors they themselves do not practice(Oberg and Frank, 2009).

**Justification and Importance**

The family doctor in Sudan play the big role in the improvement of healthy habits by effective health education and promotion, according to health utilization services in Sudan survey conducted in August 2008; 77% reported to public-sector facilities while 33.5% of them reporting to the health center(Federal Ministry of Health, 2011). Since the family doctor is the one that people most trust his instruction concerning their health, so in Sudan they need doctors believe and practice these healthy habits to be more honest and convincing regarding the healthy lifestyle habits. In this research, I want to find out how far the family doctors in Sudan practice the healthy lifestyle habits in their daily life, what the barriers and supporters to achieve the perfect healthy model for the patients, and to demonstrate it on their medical practice.
OBJECTIVES

General objective:
To assess the lifestyle habits of Sudanese family doctors and how it influences their practice in Khartoum state in 2017

Specific objectives:

- To identify whether the Sudanese family doctors stick to the exercise, healthy diet and stress management in their daily life.

- To estimate the smoking habit of Sudanese family doctors.

- To determine the impact of their lifestyle habits on their health by measuring BMI and does they check their patients BMI.

- To determine how far the doctors are doing health education and promotion to their patients regarding the healthy diet, exercise, and smoking cessation.
Chapter Two

Literature review

Lifestyle behaviors are becoming a core strategy in disease prevention and management (Lifestyle Medicine Task Force, 2009). The family medicine doctors are more concerned with this strategy to apply to their patients since they are the primary health care doctors. According to Egger, who said the lifestyle medicine is “A clinical discipline which involves general practitioners working with a team of allied health professionals to develop a patient-specific intervention"(Lifestyle Medicine Task Force, 2009). Researchers become more concerned with the healthy lifestyle and its direct impact on health. According to WHO, 60% of related factors to individual health and quality of life are correlated to lifestyle (Ziglio, Currie and Rasmussen, 2004). Unhealthy lifestyle is involved in the causative factor for a lot of diseases, such as chronic diseases like diabetes and hypertension, in addition to more specific organic diseases like cardiovascular, renal and liver disease (Farhud, 2015).

The healthy lifestyle habits that will be covered in this research are smoking, diet, exercise, and stress, besides that, measuring their BMI to reflect the lifestyle effect on family doctors’ weight in Khartoum state. About 1.1 billion people around the world use tobacco smoking, in spite of declining it in some countries, there is increasing in African countries(‘WHO | Prevalence of tobacco smoking’, 2016). Some studies showed rising in smoking rate among family doctors, 34.1% is the prevalence of smoking in Turkish family doctors, where 25.7% among chines doctors(Baltaci et al., 2014)(Huang et al., 2013), while Bahraini doctors percent is 8.6(Saif M. Borgan et al., 2014). Which affect somehow in the counseling to their patient about smoking cessation? The smoker doctors are less likely to advise their patient to quit smoking but they are more tending to refer them for cessation programs(Duaso et al., 2014), and yet some doctors reported no any impact on their patient counseling from their smoking habit(Lina et al., 2016). The role of the family doctors in the healthy diet is the screening of obese patients and assessment of current diet, discussion, goal setting and provide information about the healthy diet with absolutely monitoring progress in the plan (Publications, 2014). At the same time, doctors themselves do not follow this rules they should practice with their patients and consume the standard diet (Nemeth, 2016).
**The ideal diet:** Adjust composition/portion size of each meal to maintain a healthy weight. Include a variety of foods:

- Use starchy foods (e.g. bread, rice, pasta, potatoes) As the main energy source

- Eat plenty of fruit and vegetables (>5 portions of fruit and vegetables/d) Do not overcook vegetables; steaming is preferable to boiling, and keep the delay between cutting and eating fruit/vegetables to a minimum

- Eat plenty of fiber Good sources are: high-fiber breakfast cereals, beans, pulses, wholemeal bread, potatoes (with skins), pasta, rice, oats, and fruit/vegetables

- Eat fish At least 2x/wk. including one portion (max. two portions if pregnant) of oily fish (e.g. mackerel, herring, pilchards, salmon). ↓ cooked red or processed meat; consider substituting meat with vegetable protein (e.g. pulses, soya)

- Choose lean meat Remove excess fat/poultry skin and pour off fat after cooking; avoid fatty meat products (e.g. sausages, salami, meat pies); boil, steam, or bake foods in preference to frying; when cooking with fat use unsaturated oil (e.g. olive, sunflower oil) and use corn flour rather than butter and flour to make sauces

- Use skimmed milk and low-fat yogurts/spreads/cheese (e.g. Edam or cottage cheese).

There are so many barriers to have a healthy diet, family doctors can experience in Sudan, particularly work pressure or burnout and low income; the fresh fruits are more expensive than potato and rice, besides no enjoyment in healthy diet compared with fast food or junk one. Moreover, doctors are neglecting physical activity, as well as unhealthy dietary habits as the research done in Lebanese residents, showed that only 6 residents out of 106 have proper physical activity, while 70% of them are having one or two meals/day. The recommended amount of physical activity for an adult is more than 30 min daily of moderate intensity for at least 5 days a week, which has an important role in decreasing the mortality rate of non-communicable diseases (NCD). The fourth investment of the seven best investments of physical activity by the international society of physical activity and health stated that Physical activity and NCD prevention integrated into primary health care systems, thus the family doctor should be the
influencer for the patients to do physical activity as preventive measures or even as treatment (Latin, 2010). After all, doctors can encounter difficulty to exercise, indeed, they can also stop to advise their patients to exercise which is seen in research conducted in Kerala (south of India), where they found the majority of family doctors (62%) were inactive rather advice their patients to be active (Patra et al., 2015).

Stress has always been linked to medical practice and doctors’ lifestyle and consequently burnout. While burnout was defined, by the American psychologist Herbert Freudenberger in 1970s, as a consequence of stress from being dealing with life’s and health problems’ of people (Health, Library, and Institutes, 2019), so it’s a cycle that can start and ends on stress. An Irish study reported poor healthy lifestyle and self-management culture among doctors contributes to causes of stress. Possible causes include feeling either permanently overworked or under-challenged, being under time pressure, or having conflicts with colleagues (Health, Library and Institutes, 2019). The workplace for family doctors in Sudan is challenging in order to practice medicine and to be satisfied, on the other hand, the low income exposes them more to stress. Physical activity or listening music is type of prevailing relaxation techniques doctors are use (Rajan and Bellare, 2011)

The Nigerian author M. N. AGHAJI, published a cross-sectional study in East African Medical Journal in 2000 entitled: Doctors lifestyle in Enugu, Nigeria (Aghaji, 2000), the Objectives of his study is To assess the prevalence of tobacco use, physical inactivity, obesity besides alcohol misuse among doctors. It included hundred and sixty-two doctors working in health facilities in Enugu, Nigeria. The study showed a high prevalence of male smokers in compare with British and American doctors, the doctors' weight is within the normal range for African but more than British and Chinese ones. Inactivity is the predominant risky lifestyle habit among the Enugu's doctors.

In Bahrain, they conducted a study entitled; The lifestyle habits and wellbeing of physicians in Bahrain: a cross-sectional study in 2015 was published in BioMed Central-public health (BMC) (Saif M. Borgan et al., 2015), it is the first study adopting the health of doctor in the Middle East. It was aimed to explore more about the health and lifestyle of primary care physicians in Bahrain. The comprehensive study assessed doctors' well-
being, and lifestyle habits, the outcome is about 72.5% of physicians had an above normal BMI, with significantly higher BMI in older and male physicians, then low exercise rate with only 29.6% of reporting at least 30 min of exercise during a week, also the smoker rate is 8.6% (Saif M. Borgan et al., 2014). The participants who reported that they eat three meals per day counted for 41% and the mean daily water intake is 1.7 L, the mean stress level was 6/10.

In regarding counselling, a study was published in Family Medicine Journal 2007 entitled: Health Behavior Counseling in Primary Care: Provider reported Rate and Confidence by Kristin S. Vickers (Vickers et al., 2007), the study aimed to recognize the relationship between healthcare providers' health behaviors and their confidence of counselling their patient on these behaviors. It covered one hundred providers' (doctors & nurses). They assessed the rate of health behavior change counseling, perceived importance of counseling, the extent of counseling training, confidence in counseling abilities, and clinician personal health behavior through measuring the physical activity, smoking status, and healthy eating behavior. The researchers found that most of the participants are confident to counsel their patients in behavior they are engaged in successfully. However, they didn't find a correlation between the providers' healthy habits and the counseling process in regression analysis, Kristin and her colleagues explained this as "Self-report of personal health behaviors are subject to bias. For instance, it may be less important to investigate provider frequency of healthy eating or exercise and more important to assess provider perception of their appearance, body image, or concern about how their patients view them" (Vickers et al., 2007). Altogether, correlation is not causation; in fact, the healthy habits aren't correlated with the counseling process but would rather affect the doctor health, interest, enthusiasm, and increase his counseling performance. One more study highlighting the doctors' lifestyle habits entitled; Lifestyle Habits among Physicians Working at Hospitals in Japan published in Japan Medical Association Journal by K Wada, T. yoshikawa, and Goto et al. in 2011 (Wada et al., 2011). The study is designed to elucidate the lifestyle habits of the hospital employed physician in Japan particularly smoking, exercise, and dietary habits, the study includes 3,879 doctors. The smokers are 16%, the smoking rate is higher among younger males, but they have more tendency to quit smoking especially the elder ones, female smokers is
4.8%, while ex-smokers scored 2.9%. The physicians reported "no exercise" were 59.9% of men and 72.6% of women. The researchers used a quantitative speculum to reflect the dietary habits, 24% of males and 22% of females are eating until fullness; additionally, the preponderance of balanced diet consumers among elderly doctors. Finally, the Japanese doctors are less following the healthy lifestyle habits compared with rest of population and other countries.
Chapter Three
Methodology

Study type: A Cross-sectional descriptive facility-based study.

Study area: the study was conducted in Khartoum state, which contains 205 health centers that provide health services in a rate of one health center to every 13300 citizens 80% of them have their health centers within 5 kilometers. I only chased the family medicine health center, in favor of availability of family doctors, which were 27 family medicine health center.

The study population: family doctors, working in primary health care centers N=108

Sampling: it was two stages, cluster sample:

Stage one: Two localities, Khartoum and Karary, were selected out of seven through Probability Proportional to Size (PPS); the total number of health centers in every locality is taken from state ministry of health. The family was out of service, like AL-Sahafa Garb health center in Khartoum locality was under construction. Others were the doctors working in were not family doctors yet like AL-Hara 75 health center in Karary.

Stage two: I made total coverage of family doctors working in the family medicine centers in the two localities.

The data collection: I used self-pretested questionnaire, containing 3 sections, demographic data, lifestyle habits, and medical practice section. The demographic section included 5 items about the age, gender, and experience. The lifestyle section included 6 items about smoking, stress, exercise, diet, and BMI, I did a small group discussion about the questionnaire then I removed one question because it was unclear. Final section included six item about the doctor advice patient regarding the same lifestyle habits.

Data analysis: done by SPSS version 24.0
Ethical Consideration

- Written ethical clearance and approval for conducting this research was obtained from University of Gazira relevant ethical Committee and Khartoum state ministry of health research department.

- Research purpose and objectives were explained to participant in the clear simple word.

- Participant had the right to voluntary informed consent.

- Participant had right to withdraw at any time without any deprivation.

- Participant had the right to no harm (privacy and confidentiality by using coded questionnaire).

- Participant had the right to benefits from the research knowledge and skills.

- The questionnaire was filled in the doctor rest time.

- Study data/information is used for the research purposes only. The privacy issues are intentionally considered.
Chapter Four

Results

Data analysis

Demographic data

The total number of participants is 108, they are between 24 to 60 years old, and the majority is females scored 85, while males are 23. Most of the family doctors working 8 hours per day,

Smoking:

• The smoking proportion varies greatly. Almost all the study population is never smoke with 91 per cent, while the smokers are 4 per cent. 80% has tried to quit smoking, the twenty per cent left are never tried to stop which they attributed to two reasons;” don't want to stop” or "don't know how to stop".

Stress:

• 22% are in the middle of the scale, the mean of stress scale was 6, 7% are being the calmest while 4% are being worst ever. Workload had the highest percentage of causing stress to the family doctors by 54 per cent. So many different ways they used to relax, but take a working break is the most method they slip in to relax scored 16%, the second most used method to relax is the sleep with 14 percent

Diet:

• Most of the family doctors think they are consuming un-healthy diet, 40% only they think they are eating a healthy diet. Nearly the half are having three meals per day; whereas, the majority are not having at least 5 portions of fruits per day. This table showed half of family doctors drink less than 2 liters per day, the other half drink two to three liters per day, minorities drink more than 3 liters per day

BMI and General Health:

• Overweight doctors are the majority, while obese doctors scored 26%. Majority of doctors said they have good health with 52%, while 34% said their health is just fair, low percent have poor and excellent with 7% and 6% respectively.

Practicing the Healthy Lifestyle:

• Sixty two percent of family doctors advice only the chronic disease patients about the healthy food and balanced diet, while 36.1% advice all patients. Only two doctors never mentioned this to their patient. The table No (6) showed 64.8% of family doctors
checking the BMI only to the patients with chronic disease, at the same time, 24.1% have never measured their patients BMI. Eleven percent of family doctors are checking BMI to all patients. The percentage of family doctors who advice the patients with chronic disease about the exercise is 8.3%, in the same time, 40.7 are also advice all patient to do exercise, one doctor has never advice the patients about the exercise. About 54% of family doctors were interesting to advice their patient to quit smoking, although, 43% are sometimes advice the patients, the percentage of family doctors who never advise the patients about stop smoking is 4%. Half of the family doctors advise only the patients with chronic disease about the stress and the relaxation technique, the other half of family doctors are more divided into two halves between advice all patients (23.1%) or never advice any patient (29.1%) about the stress and the relaxation technique.

**Associations:** Statistical Significant association between Physician smoking status and advice patients to stop smoking. Almost all Non-smokers FPs tends to advice their patients to stop smoking. P value =0.000. Most obese doctors and all underweight doctors are checking patient's BMI only if they are suffering from obesity, and the highest percentage (23.8%) for checking patient's BMI, is among FD who has normal BMI. However, this association is statistically insignificant. P Value=0.51 . Most FDs who advice ALL patients to exercise are having regular exercise 3-4 times per week, however this association is statistically insignificant p value = 0.1

**Table 1.** Background variables of the family doctors in Khartoum state 2017

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<td>8 hours</td>
<td>87</td>
<td>80.6</td>
</tr>
<tr>
<td>9-12 hours</td>
<td>17</td>
<td>15.7</td>
</tr>
<tr>
<td>More than 12 hours</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>81.00</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>working days</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hours</td>
<td>88</td>
<td>81.5</td>
</tr>
<tr>
<td>9-12 hours</td>
<td>17</td>
<td>15.7</td>
</tr>
<tr>
<td>More than 12 hours</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 2: the smoking among the Sudanese family doctors in Khartoum state 2017

<table>
<thead>
<tr>
<th>gender</th>
<th>Do you smoke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes</td>
<td>Never</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>17.4%</td>
<td>56.5%</td>
</tr>
<tr>
<td>Females</td>
<td>0</td>
<td>85</td>
</tr>
<tr>
<td>Total</td>
<td>0.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>3.7%</td>
<td>90.7%</td>
</tr>
</tbody>
</table>

Table 3: the attempt to quit smoking among male doctors in Khartoum state 2017

<table>
<thead>
<tr>
<th>gender * Have you ever tried to stop smoking</th>
<th>N= 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>gender</td>
<td>yes</td>
</tr>
<tr>
<td>Male smokers</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>50.0%</td>
</tr>
</tbody>
</table>
Figure 1. Stress scores among family doctors in Khartoum state 2017

Table 4: Mean and standard deviation for stress level family doctors in Khartoum state 2017

<table>
<thead>
<tr>
<th>Rate your level of stress</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>108</td>
<td>0.00</td>
<td>10.00</td>
<td>5.0673</td>
<td>2.34112</td>
</tr>
</tbody>
</table>

Figure 2. Cause of stress among Family doctors in Khartoum state 2017
Figure 3. The relaxation methods used by the family doctors in Khartoum state 2017

Figure 4. Showed Percentage of family doctors who exercised at least 30 min, with sufficient intensity to induce perspiration, over the past month in Khartoum state 2017
Table 5. Quality, Frequency and amount of family doctors’ Diet in Khartoum state 2017

<table>
<thead>
<tr>
<th>Meal(frequency, amount and quality)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think you eat healthy diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>44</td>
<td>40.7</td>
</tr>
<tr>
<td>No</td>
<td>64</td>
<td>59.3</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
<tr>
<td>Do you have 3 meals per day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>48</td>
<td>44.4</td>
</tr>
<tr>
<td>no</td>
<td>60</td>
<td>55.6</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
<tr>
<td>do you have at least 5 portions of fruits per day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>35</td>
<td>32.4</td>
</tr>
<tr>
<td>No</td>
<td>73</td>
<td>67.6</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 6. Family doctors’ Daily water intake in liters in Khartoum state 2017

<table>
<thead>
<tr>
<th>How many liters of water per day?</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 2 liters</td>
<td>52</td>
<td>48.1</td>
</tr>
<tr>
<td>2-3 liters</td>
<td>52</td>
<td>48.1</td>
</tr>
<tr>
<td>4-5 liters</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>
**Figure 5.** BMI of family doctors in Khartoum state 2017

**Figure 6.** Self-evaluation of the General Health of Family doctors in Khartoum state 2017
Table 7. Family doctors who advise patients to have healthy food in Khartoum state 2017

<table>
<thead>
<tr>
<th>Do you advise your patients about healthy food and balanced diet</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td>39</td>
<td>36.1</td>
</tr>
<tr>
<td>patients with chronic diseases</td>
<td>67</td>
<td>62.0</td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 8. Family doctors who check the BMI for their Patients in Khartoum state 2017

<table>
<thead>
<tr>
<th>Do you check the BMI for your Patient?</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>all patients</td>
<td>12</td>
<td>11.1</td>
</tr>
<tr>
<td>patients with chronic diseases such as obesity</td>
<td>70</td>
<td>64.8</td>
</tr>
<tr>
<td>never</td>
<td>26</td>
<td>24.1</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>
**Table 9.** Percentage of family doctors who advise their patients the importance of exercise in Khartoum state 2017

<table>
<thead>
<tr>
<th>Do you advise your patients about exercise and its importance to health?</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td>44</td>
<td>40.7</td>
</tr>
<tr>
<td>patients with chronic diseases such as hypertension</td>
<td>63</td>
<td>58.3</td>
</tr>
<tr>
<td>Never</td>
<td>1</td>
<td>.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Table 10.** Family doctors who advise their patients to stop smoking in Khartoum state 2017

<table>
<thead>
<tr>
<th>Do you advise your patients to stop smoking</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>sometimes</td>
<td>46</td>
<td>42.6</td>
</tr>
<tr>
<td>regular</td>
<td>58</td>
<td>53.7</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Table 11.** Family physicians who advise patients on stress and relaxation technique in Khartoum state 2017

<table>
<thead>
<tr>
<th>Do you ask patients about stress and relaxation technique?</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td>25</td>
<td>23.1</td>
</tr>
<tr>
<td>patients with chronic disease</td>
<td>55</td>
<td>50.9</td>
</tr>
<tr>
<td>Never</td>
<td>28</td>
<td>25.9</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Figure 7. Relationship between family doctors smoking status and advising the patients to stop smoking in Khartoum state 2017

Figure 8. Association between family doctors’ BMI and Regular check patient's BMI in Khartoum state 2017
**Figure 9.** Association between family doctors exercise and advising the patient to do exercise in Khartoum state 2017

P value = 0.1
Chapter Five
Discussion

This study came out with divergent results that reflecting the Sudanese family doctors healthy lifestyle status in Khartoum as well as the influence of their trending habits on the counseling to the patients in particular lifestyle habits which are smoking, stress, healthy diet, exercise, and BMI.

In the study group, the mean age was 36 years, females form the majority with 78%, and this gender variation is prevalent in the primary healthcare setting due to women tendency to choose this specialty (Vassar L., 2015). The working hours of the study group members were 8 hours per day (80.6%) that is a common shift in family medicine practice, whereas no regular admissions or follow up obligate the doctor to extend the time of work. The minority (15.7%) who working longer mostly has another shift in different health service facility, which is prevailing in Sudan to increase the individual income. The preponderance of women is apparently affecting the smoking percentage of the total study population, which showed high percent (91%) of “never smoke”, American study has approved the low percent of the smoking rate among female doctors (Erica Frank et al., 1998). Nevertheless, the smoking rate among males was 17%; however, who are “never smoked” were the majority, while 26% were ex-smokers. These figures are so close to different smoking rates in other international studies in Bahrain, Nigeria, and Japan, the female doctors smoking rate is zero in the study group compared to other nationalities which showed scored rate between 2% to 5% (Aghaji, 2000; Wada et al., 2011; Saif M Borganet al., 2014).

Some doctors who are smokers when asked about whether they tried to quit smoking, they admitted are not intended to stop or they don’t know how to stop the smoking, unfortunately, such thinking will going to reflect on advice the patients about smoking cessation. As in Meta-analysis of 11 databases covering English and Spanish language publications since 1996, data found that doctors who were current smokers had a 17% increased risk of not advising their patients to quit compared with never-smokers; at the same time, never smokers were more likely to counsel them to quit than current smokers (Duaso et al., 2014).
Stress score showed 22% of the total number of doctors were moderately suffering, as the doctors in Bahrain the moderate stress level were the majority (Saif M. Borgan et al., 2015), 54% of our study group's stress is caused by the workload. Since the emotional exhaustion is leading to burnout according to (Maslach, Schaufeli and Leiter, 2001); “Prolonged exposure to stress is usually the main cause of emotional exhaustion and it manifests through the loss of enthusiasm for work, feeling helpless, trapped, and defeated”. Other mentioned factors are the quality of life indicators, such as financial status, general living conditions and family relations correlate with manifestations of stress, the European study in Belgrade approved the higher quality of life the lower the work stress and vice versa (Soler et al., 2008). The relaxation techniques vary in the family doctors' responses; taking a work break and sleeping were had the higher percentages with 16%, 14% respectively.

Most of the family doctors reporting that they exercise 1 to 2 times per week; however, doctors can consider walking distance up to work as an exercise. The inactive doctors were 35%, this is surprisingly less than the Nigerian doctors, and far from the high percent of active doctors in Bahrain (Aghaji, 2000; Saif M Borgan et al., 2015). Besides, our doctors' percentage is approximated to Japanese doctors' study that showed the exercise 1 day a week is in increasing with age to reach the peak in the 50s and 60 doctors (Wada et al., 2011), nevertheless, this comparison not really exist due to different tools used in both studies.

In dietary habits, 44.4% having three meals per day that are comparable to doctors in Bahrain. About 59% believes they are not eating a healthy diet, the availability of junk food, the better taste compared to healthy food, even more, the concept of the healthy food is only for weight decrease, reduce the care about having it. In the same way, there is a high percent of family doctors not having enough amount of fruits per day, the food culture also plays important role in dietary habits of the family doctors in Khartoum. The predictable high per cent of overweight doctors (54%) and 26% of obese ones, they are similar to the Nigerians doctors which is possibly due to common the African weight pattern; surprisingly, the Bahraini doctors showed higher percent of obesity in spite their
better results in exercise and dietary habits. We have to consider the cultural values of Sudanese people, which see the overweight as the good living symbol.

The relation between doctors’ smoking and counselling about the smoking was significant (p= ), its recognized by other studies (Duaso et al., 2014). In the contrary, relation between doctors’ weight, exercise, and dietary habits, with counseling patient regarding this was statistically insignificant with (p ≤0.1), , this is unreliable result, in fact many studies found a relation between doctors healthy habits and counselling rate regarding the same matter(E Frank et al., 1998; Frank, 2004).
Chapter six

Conclusion

Conclusion conducting more studies in this field with larger sample and standardized tools; to evaluate the real health lifestyle habits of family doctors then put policies and help them to enjoy health life. To conclude, this research is the first one conducted in Sudan regarding the healthy lifestyle of the family doctors in relation to their medical practice include smoking, exercise, dietary habits, and stress; the family doctors in Khartoum state showed high percent of inactivity and overweight, as well as, unhealthy diet. The non-smoker showed a high rate of advising their patient to stop smoking while no relationship was founded between other variables like exercise, healthy diet, and BMI check with doctors healthy lifestyle habits. Doctors don’t practice what they preach is the solely conclusion for this research.
Recommendation

- I recommend conducting more studies in this field with a larger sample and standardized tools; to evaluate the real health status of family doctors then put policies and help them to enjoy a healthy life.

- Including more variables in doctors’ lifestyle like sleep and drug misuse, even alcohol intake, as these are affecting the doctors’ self-poise, and the way the dealing with patients.

- Making regular workshops in order to enlighten the family doctors more about the importance of healthy lifestyle in their health and practice outcome.
References


WHO (2005) *The Bangkok Charter for Health Promotion in a Globalized World*. Geneva, Switzerland. Available at:


APPENDIX A
QUESTIONNAIRE OF LIFESTYLE

Dear colleague, Please fill out this form as completely as possible.

SECTION 1

GENERAL INFORMATION
- Age: .................................
- Years of experience ............
- Sex: M [ ] F [ ]
- Working hours/day:
  - 8 hours [ ]
  - 9 -12 hours [ ]
  - More than 12 hours [ ]
- Working days/week:
  - less than 3 days [ ]
  - 3 days [ ]
  - 5 days [ ]

SECTION 2

SMOKING
- Do you smoke?
  - Yes [ ]
  - Never [ ]  if never, go to the stem NO 2.
  - Ex-smoker [ ]
- if yes, for how long
- If yes, have you tried the smoking cessation program before?
  - Yes [ ]
  - No [ ]
  - If NO, why? .................................................................
• **Stress**
  - Rate yourself on a scale of 1 – 10.
    - 1 being calmest -------10 suffering badly
    - circle the number:
      1 2 3 4 5 6 7 8 9 10
  - What situations make you feel stressed?
  - 10. How do you relax?

• **EXERCISE**
  Have you exercised for at least 30 minutes, with sufficient intensity to induce perspiration, over the past month?
  - 3 to 4 times per week
  - 1 to 2 times per week
  - 1 to 2 times per month
  - Not at all

• **DIET**
  - Do you think you eat a healthy diet?
    - YES
    - NO
  - Do you have 3 meals per day?
    - Yes
    - No
  - Do you have at least 5 **portions** of fruits per day? * Definition in the box in page 3.
    - Yes
    - No
  - How many liters of water do you drink in a day?
• **BODY MASS INDEX (BMI)**
  
  BMI calculation
  
  • Height in cm………..
  
  • Weight in kg………..
  
  • BMI ……………

• **AS A DOCTOR**, how do you evaluate your general health?
  
  • Excellent
  
  • Good
  
  • Fair
  
  • Poor

**SECTION 3**

**Medical practice**

• Do you advice your patient about the healthy food and the balanced diet?
  
  • All patient
  
  • Patients with chronic diseases, such as diabetes
  
  • Never
  
  • If NEVER, WHY?
    …………………………………………………………………………………………………………………

• Do you check the BMI for your patient
  
  • All patient
  
  • Patients with chronic diseases, such as obesity
  
  • Never
  
  • If NEVER, WHY?
    …………………………………………………………………………………………………………………

• Do you advice your smoker patient about smoking cessation?
  
  • Never
  
  • Sometimes
  
  • Regular
• If NEVER, WHY?

……………………………………………………………………………………………………...

• Do you advice your patient about the exercise and its importance for their health?
  • All patient
  • Patients with chronic diseases, such as hypertension
  • Never
  • If NEVER, WHY?

……………………………………………………………………………………………………
……

• Do you ask your patient about the stress and relaxation techniques
  • All patient
  • Patients with chronic diseases
  • Never
  • If NEVER, WHY?

……………………………………………………………………………………………………
……

What is a portion of vegetables or fruit?
One portion of vegetables or fruit is roughly equivalent to:
• 1 normal portion (2 tablespoons) of any vegetable
• 1 dessert bowl of salad
• 1 large fruit, e.g. apple, banana, orange, pear, peach, large tomato, or a large slice of pineapple or melon
• 2 smaller fruits, e.g. satsumas, plums, kiwi fruits, apricots
• 1 cup of small fruits, e.g. strawberries, raspberries, blackcurrants, cherries, grapes
• 1 tablespoon of dried fruit
• 2 large tablespoons of fruit salad, stewed or canned fruit in natural juices
• 1 glass (150mL) of fresh fruit juice