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# From the Editor

**Chief Editor:**
A. Abyad
MD, MPH, AGSF, AFCHSE
Email: aabyad@cyberia.net.lb
**Ethics Editor and Publisher**
Lesley Pocock
medi+WORLD International
AUSTRALIA
**Email:**
lesleypocock@mediworld.com.au

**Editorial enquiries:**
aabyad@cyberia.net.lb

The editorial and production team would like to wish the readers and all our colleagues a very happy start of the new year and we wish all of you a successful year.

This issue has a number of papers dealing with various topic of interest to our readers in the region.

A paper from Jordan reviewed women health problems in patients presented to Royal Medical Services humanitarian missions over 3 years period. Analysis of humanitarian missions of RMS data and records over three years periods( 2009-2011) in regards to women's health issues was done. During 3 years period 72 missions were deployed to 4 locations ( Gaza, Ram Allah –West Bank, Jeneen-West Bank, and Iraq). Total numbers of females seen in this period was 86436 women accounting for 56% of adults patients seen by RMS humanitarian missions. The authors concluded that women's health care providers are needed to advise, assist, and support public health authorities in planning for and serving during a disaster. Emergency preparedness is essential to maintaining healthy pregnancies and ensuring good outcomes for pregnant women and their infants who endure disasters.

A paper from Oman presented a case of MERS-COV. A 59 year old chronic smoker admitted with fever cough and dyspnea. With rapidly progressing symptoms and right sided pneumonia he was shifted to intensive care where he died. The diagnosis of corona virus infection was made after his death when endotracheal aspirate transcriptase polymerase chain reaction (RT-PCR) became positive. The authors concluded that this infection is rapidly progressing disease which requires up to date awareness and information regarding its spread and precaution. Urgent epidemiologic investigations are required to better understand the transmission patterns of this virus.

A paper from Prince Zaid Military Hospital aimed to determine the most prevalent factors related to non-compliance to antihypertensive treatment. A questionnaire-based cross-sectional study focused on factors thought to be responsible for non-compliance to hypertensive medication referred to out-patient medical clinic at Prince Zaid Military Hospital. 471 patients attended the out-patient medical clinic during the period from June, 2011 – December, 2011. The study revealed that about 24% of the enrolled patients were non-compliant to the hypertensive treatment in which (80.7%) reported that lack of information regarding importance of taking drugs, drug prescription regimen for more than one dose per day accounted for (71.9%) while primary and secondary education levels (70.2%) were more than the illiterate and higher education. The number of medication among non-compliance accounted for (62.2) for more than one medication and unavailability of drug (59.6%), forgetfulness (55.3%) and drug side effects were (50.9%) and absence of symptoms (44.7 %) was the least reported factor of non-compliance.

A Paper from Beirut addresses the reasons for adopting vegetarianism and the health impacts of a vegetarian diet on some people in Lebanon. Results of this analysis will be used to heighten the awareness of the public, health care professionals, government and health agencies on the positive attributions of a vegetarian diet. A cross-sectional study of developmental research was used for this research which consisted of a quantitative approach that used a questionnaire filled by a random sample of respondents. The people surveyed or the respondents were individuals exposed (for any duration of time) to any type of vegetarian diet. The hypotheses were tested using frequency analysis, chart analysis and cross-tabulation using the Statistical Package for the Social Sciences (SPSS). The researcher concluded that most of the surveyed people in Lebanon adopt vegetarianism or are interested in this diet for health and religious reasons primarily (specifically Christians during Lent), for a temporary period of time, and they believe it has a positive effect on health especially in preventing some diseases and feeling generally better.

A paper from Pakistan stressed that sexually transmitted infections (STIs) constitute a major cause of acute illness, infertility, long-term disability and death, with severe medical and psychological consequences for millions of men, women and infants. In Pakistan, the STIs control programme focuses on infections such as syphilis, chancroid, gonorrhoea, chlamydial infection, trichomoniasis, and their associated syndromes. Viral infections like herpes simplex viruses (HSV) and human papilloma viruses (HPV) are also included in these programmes as these are usually transmitted sexually.

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**Email:**
lesleypocock@mediworld.com.au

**Editorial enquiries:**
aabyad@cyberia.net.lb

# The Reasons for Consuming a Vegetarian Diet in Lebanon and the Survey of its Health Impacts

**Evelyne M. Girgis**

**Correspondence:**
Evelyne M. Girgis, Ph.D.
Lebanese University
Faculty of Education
Second Branch
Rawda, Beirut- Lebanon
Tel: 961-1-680382
Fax: 961-1-680193
**Email:** emgirgis@yahoo.com

## Abstract

**This study addresses the reasons for adopting vegetarianism and the health impacts of a vegetarian diet on some people in Lebanon. Results of this analysis will be used to heighten the awareness of the public, health care professionals, government and health agencies on the positive attributions of a vegetarian diet. A cross-sectional study of developmental research was used for this research which consisted of a quantitative approach that used a questionnaire filled by a random sample of respondents. The people surveyed, or the respondents, were individuals exposed (for any duration of time) to any type of vegetarian diet. The hypotheses were tested using frequency analysis, chart analysis and cross-tabulation using the Statistical Package for the Social Sciences (SPSS). The researcher concluded that most of the surveyed people in Lebanon adopt vegetarianism or are interested in this diet for health and religious reasons primarily (specifically Christians during Lent), for a temporary period of time, and they believe it has a positive effect on health especially in preventing some diseases and feeling generally better.**

**Key words:** **Vegetarian, Lebanon, Health, Statistics**

## Introduction

A vegetarian diet is a meal plan made up of foods that come mostly from plants. These include vegetables, fruits, whole grains, legumes, seeds, and nuts. A vegetarian diet has little or no animal products (new Appendix I). Types of vegetarian diets include:

- **Vegan:** Diet consists of only plant-based foods.
- **Lacto-vegetarian:** Diet consists of plant foods plus some or all dairy products.
- **Lacto-ovo vegetarian:** Diet consists of plant foods, dairy products, and eggs.
- **Semi- or partial vegetarian:** Diet consists of plant foods and may include chicken or fish (pesco-vegetarian), dairy products, and eggs. It does not include red meat.
- **Macrobiotic:** Diet followed for spiritual and philosophical reasons. It aims to maintain a balance between foods seen as yin or yang, and is mainly based on plant based food.

Many researchers have reported a direct relationship between a vegetarian diet and the prevention of and curing several illnesses, such as: Hypertension, Hypercholesterolemia and Hypertriglyceremia, Obesity, Type 2 Diabetes and Heart diseases [1-8].
Compared to non-vegetarians, vegetarians usually eat:

- Fewer calories from fat (especially saturated fat)
- Fewer overall calories
- More fiber, potassium, and vitamin C

In addition to celebrating World Vegetarian Day (October 1), it seems that more products are showcasing vegetarian credentials in 2014. New research from Mintel has found that 12% of global food and drink products launched in 2013 carried a vegetarian claim, up from 6% in 2009. Also, 2% of global food and drink launches carried a vegan claim in 2013, up from 1% in 2009. Today in Britain, the vegetarian diet is firmly on the map with 12% of UK adults following a vegetarian or vegan diet, rising to 20% of 16 to 24s. This research reveals that almost half (48%) of British people see meat-free products as environmentally friendly and 52% see them as healthy [9].

In Lebanon, vegetarianism has gained some popularity over the past few years[10]. However, the exact implications of this lifestyle on people in this region are still unknown. This study addresses the main reasons for consuming any form of a vegetarian diet, and its health impacts on people in Lebanon. However, the researcher will address the social and economical impacts in future publications. .

From a medical perspective, there is minimal support from healthcare professionals encouraging patients to adopt a vegetarian diet. Many medical doctors in this region believe that diet has no significant effects on curing most modern illnesses. In spite of that belief, some do think that certain foods might be one of many factors that cause, cure or prevent certain widespread degenerative illnesses. In building awareness among doctors and health care specialists, they will be able to see the major contribution of a vegetarian diet in not only curing most of today's sicknesses, but at least in relieving symptoms and the decreased need for medication. Medical specialists would then be able to combine the best of both worlds by diagnosing, preventing and treating disorders using conventional methods (such as medication or surgery) and a balanced diet.

This study will provide various medical and health associations or government agencies in this region with data to support the encouragement of this diet, if it is followed in a balanced way. Government health agencies would encourage for instance the import and even production of meat alternatives (that is still not always accessible nor always feasible in Lebanon) by decreasing import taxes and by amending some of the import/export regulations regarding this particular food stuff. In addition, health agencies may encourage farmers to grow organic food and ingredients needed to produce meat alternatives (like soy or quinoa products) by providing them with funds and preliminary resources at low cost.

In recent decades, we have been witnessing a rapid escalation in the percentage of degenerative diseases due to several reasons, mainly adopting the Western fast food diet and modern lifestyle. With time, they have abandoned most of their healthy traditional cuisine (mainly the Mediterranean diet) and active lifestyle, heading towards a more convenient, easy going and fast paced lifestyle. This research will highlight for the public the need for a solution- one that is feasible, simple and can be applied in parallel with a modern and technological way of living. The answer is a vegetarian diet tailored for people in Lebanon, mostly based on their varied traditional vegetarian food and their seasonal produce, that would improve their health status significantly, encourage good quality social interaction, and would actually decrease their total expenses on food, medication and health services.

## Materials and Methods

The research followed a quantitative approach which consisted of a questionnaire and the analysis and interpretation of the generated data with the help of Statistical Package for the Social Sciences (SPSS). The topic of interest was studied from a present point of view to yield the desired information. Therefore, a cross-sectional study of developmental research was generally used.

**a. Selected variables for the study**

The researcher covered all the variables needed in order to form a clear understanding about the subject and found that it is essential to ask first about personal information regarding their gender, age, occupation and so on. Then, their knowledge on any type of vegetarian diet and the health impact of vegetarianism on preventing and curing their diseases was investigated. And as clearly stated in the analysis below, two or more of these different variables together with the help SPSS were linked.

The set of independent variables investigated in the research are:

1. GENDER
2. AGE
3. OCCUPATION
4. RELIGION
5. DURATION ON A VEGETARIAN DIET
6. MAIN REASON FOR PRACTICING VEGETARIANSIM
7. SPECIFIC HEALTH PROBLEMS
8. VEGETARIANSIM HELPS GENERAL WELL-BEING
9. VEGETARIANSIM HELPS CURE CERTAIN DISEASES
10. EFFECT OF A VEGETARIAN DIET IN THE PROGRESSION OR RELIEF OF DISEASES

**b. Data Collection and Analysis**

The most common source of data for such research is communicating with respondents. Thus, this study used a set of questionnaires filled by a random sample of respondents. Since the percentage population who have followed a vegetarian diet or have sufficient knowledge of it is small, only individuals that have been exposed to this diet were studied. A subject data-gathering technique would provide a deeper and wider range of information. For this reason, a one-on-one survey was used. In addition, the sample size was limited to 930 individuals. The samples were collected from a few supermarkets (near the organic and produce sections), universities, schools (staff) and at gatherings (church events, friendly lunches, etc...) between Beirut, Kesserwan and Northern Lebanon. These places have residents or frequent visitors of different age groups and from the main coastal cities or surrounding suburbs/villages.

**c. Research Question and Hypotheses**

The main research questions in this study are:

**Q1:** "Why do people in Lebanon follow a vegetarian diet?"
**Q2:** "Do people in Lebanon who are acquainted with a vegetarian diet believe that this diet has a positive effect on their general well-being and relief of undesirable symptoms?"

Two main hypotheses, which seemed reasonable from the researcher's experience and vegetarianism, were formulated:

**H1:** More than 50% of the Lebanese follow a vegetarian diet for religious and health reasons.
**H2:** More than 70% of the Lebanese believe that a vegetarian diet has positive effects on a person's health status.

To test the hypotheses, frequency and percentage analysis were useful to diagnose the major characteristics of the selected sample. Also, cross tabulation was crucial in determining the relation and link between the variables. The use of the SPSS constituted to the basis for conducting such an analysis.

**d. Scope and Limitations**

There were several limitations to this study such as time and places from which samples were collected. The first major limitation of this study was the sample size. Choosing people exposed to vegetarianism from a random sample of respondents to gather data from, and then checking/organizing the gathered data, the researcher was bounded with a set of 930 questionnaires. Another limitation was the fact that the researcher had limited places from which to gather information. The researcher gathered information from a few places from the coast of Beirut to the Northern coast passing through Kesserwan ; yet trying to choose a diversified sample from most parts of Lebanon (targeting a sampled population residing, working in or visiting these districts from suburbs and surrounding villages). A third limitation was the integrity of the respondents, in answering the questionnaires, which plays a good deal of importance in the efficiency of the model.

## Results and Findings

The sample is composed of 930 respondents. According to the “normal distribution theory”, the sample size lead to results that have a 2.8 % margin error and 95% confidence interval[12]. All the results are presented in charts and tables obtained from the outputs files of the SPSS software.

**Table 1: Main reasons for Practicing Vegetarianism**

| Category label | Count | % Responses | % Cases |
|---|---|---|---|
| I have or had health problems | 189 | 17.23 | 20.32 |
| A family member/friend encouraged me | 120 | 10.94 | 12.90 |
| For general well-being or disease prevention | 303 | 27.62 | 32.58 |
| For religious or philosophical purposes | 485 | 44.21 | 52.15 |
| Total responses | 1097 | 100.00 | 117.96 |
| Total cases | 930 | | |

**a. Data Analysis & Testing**

Analysis of data on the personal information variables is shown in Tables 4 to 6:

• 60.36% of the sample was between the ages of 31 and 50 years old Table 4).
• 22.92% of the sample were students, while 42.37% were housewives (Table 6).
• 67.63% of the sample consumed vegetarian food either a few days a year or a few days a week (Table 5).
• Whereas Chart 1 shows that 54.3% of the sample believe or practice vegetarianism because it complies with their religious or philosophical beliefs.

In this part, the researcher focuses her analysis on the more specific variables that are related to the above two hypotheses (H1 and H2) and hence tested both research questions . There were some multiple responses to several questions targeted. Thus, some information was drawn based on those responses. Table 1 includes three category questions serving as reasons for consuming a vegetarian diet:

• 17.23% of the sample practices a form of vegetarianism because they have health problems.
• 44.21% of the surveyed sample practice vegetarianism for religious or philosophical purposes.
• 27.62% of the sample wants to prevent possible health disorders or for general well-being.

Therefore, hypothesis H1 is accepted according to the data shown in Table 1. In addition, Chart 3 clearly illustrates that 71.81% of the sample believes that a vegetarian diet can cure, gradually relieve symptoms of certain diseases and generally improve our overall health. Therefore, and according to the data shown in this chart hypothesis H2 is accepted.

**Chart 1: Main Reasons for Practicing Vegetarianism**

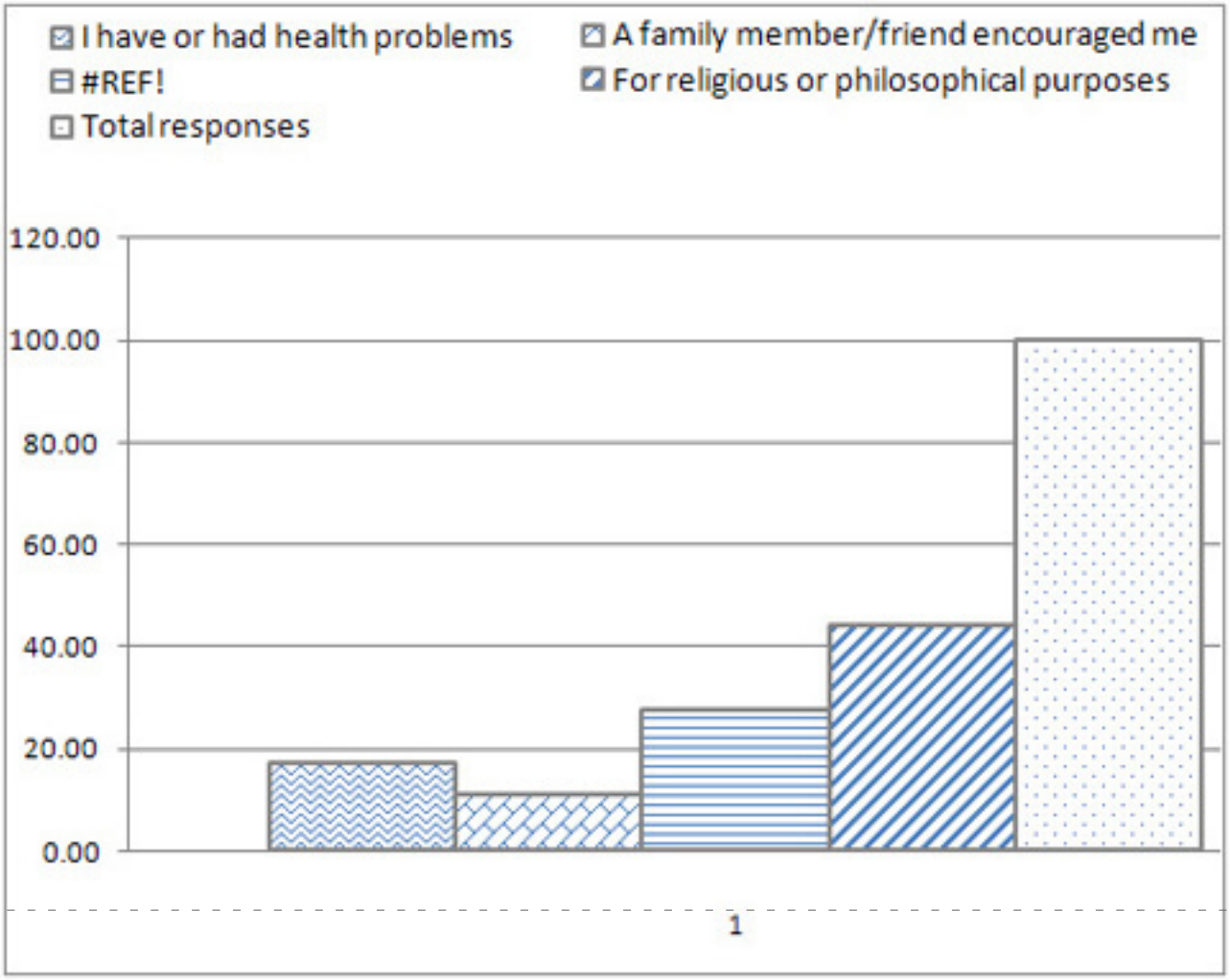


**Table 2: Main Health Problems Indicated by the Sample Surveyed**

| Category label | Count | % Responses | % Cases |
|---|---|---|---|
| General fatigue | 90 | 8.82 | 9.67742 |
| General health problems | 172 | 16.86 | 18.4946 |
| Diabetic | 54 | 5.29 | 5.80645 |
| Weight issues | 154 | 15.10 | 16.5591 |
| Blood pressure | 82 | 8.04 | 8.8172 |
| Respiratory system problems | 24 | 2.35 | 2.58065 |
| High blood lipids | 248 | 24.31 | 26.6667 |
| Allergies | 42 | 4.12 | 4.51613 |
| Hormone/Endocrine problems | 24 | 2.35 | 2.58065 |
| Digestive problems | 130 | 12.75 | 13.9785 |
| Total responses | 1020 | 100.00 | 109.677 |
| Total Cases | 930 | | |

**Chart 2: Main Health Problems Indicated by the Sample Surveyed**

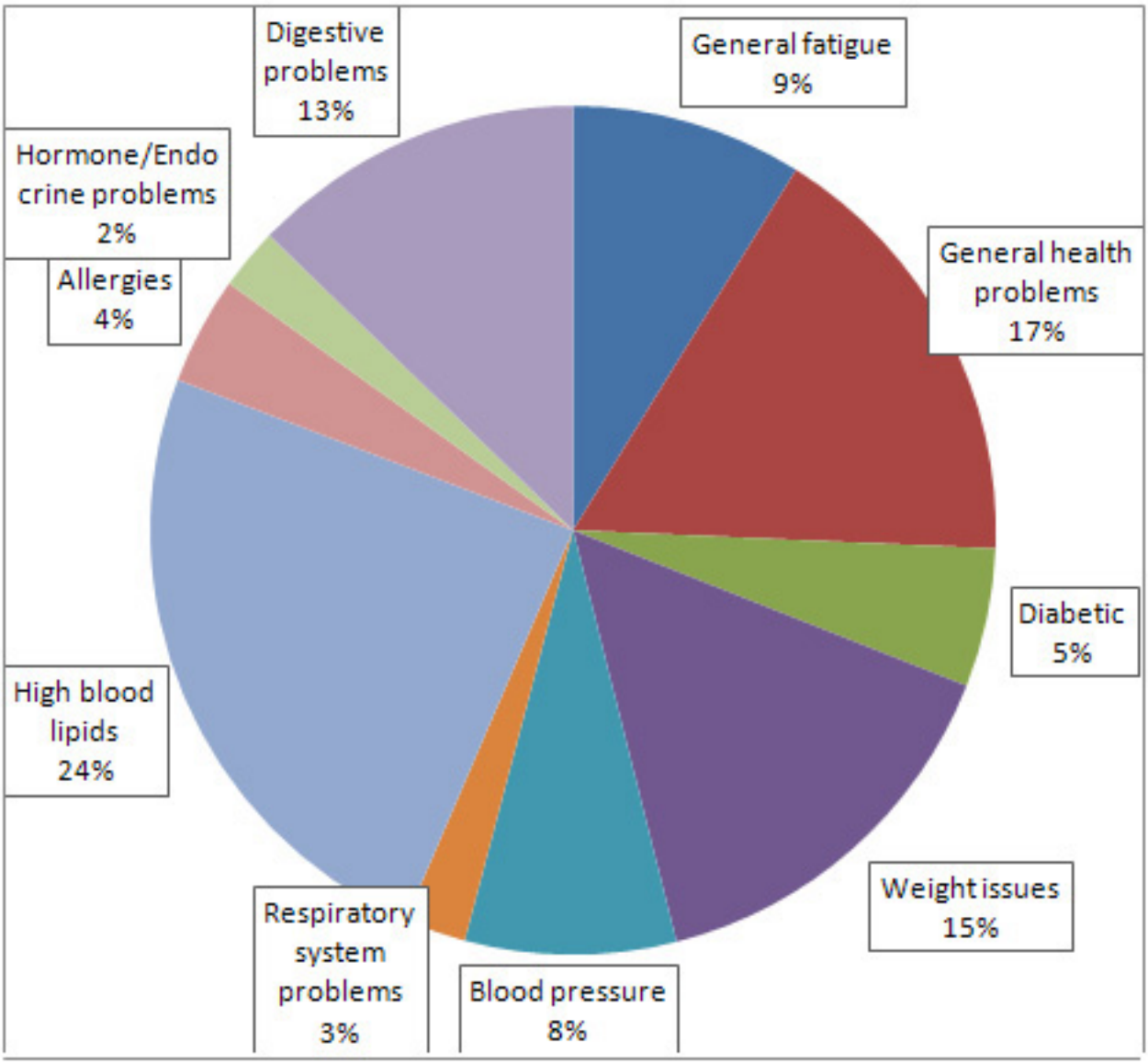


**Table 3: How Vegetarianism Affected Sample's Healing Process**

| Category label | Count | % Responses | % Cases |
|---|---|---|---|
| Bad/no effect | 39 | 4.18 | 4.19 |
| Gradually relieved pain or other symptoms | 157 | 16.83 | 16.88 |
| Cured the disorder | 67 | 7.18 | 7.20 |
| Felt better generally | 446 | 47.80 | 47.96 |
| Reduced medication | 98 | 10.50 | 10.54 |
| Lost unwanted weight | 126 | 13.50 | 13.55 |
| Total response | 933 | 100.00 | 100.32 |
| Total Cases | 930 | | |

**Chart 3: How Vegetarianism Affected Sample's Healing Process**

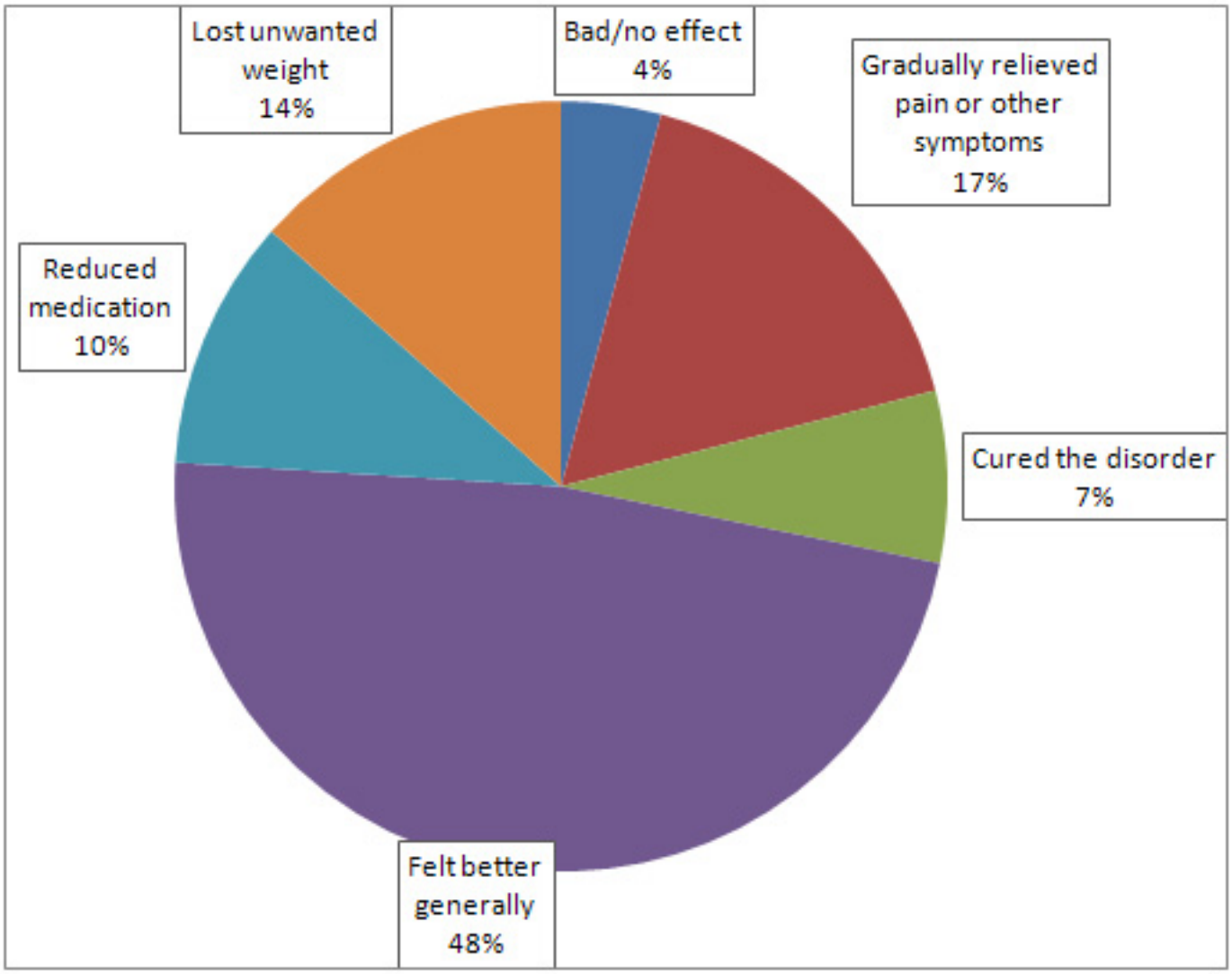


**Table 4: Frequency analysis of the "Age" variable**

| Age | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 20 Years or less | 42 | 4.52 | 4.73 | 4.73 |
| Between 21-30 years old | 154 | 16.56 | 17.34 | 22.07 |
| Between 31-40 years old | 232 | 24.95 | 26.13 | 48.20 |
| Between 41-50 years old | 304 | 32.69 | 34.23 | 82.43 |
| Between 51-60 years old | 108 | 11.61 | 12.16 | 94.59 |
| More than 61 years old | 48 | 5.16 | 5.41 | 100.00 |
| Total Valid | 888 | 95.48 | 100.00 | |
| Total Missing | 42 | 4.52 | | |
| Total | 930 | 100.00 | | |

**Table 5: Frequency analysis of the "Duration on Vegetarianism" variable**

| Duration on Vegetarianism | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| a few days a year | 366 | 39.35 | 41.21621622 | 41.22 |
| 1-2 days/week | 263 | 28.28 | 29.61711712 | 70.83 |
| 1-2 months | 169 | 18.17 | 19.03153153 | 89.86 |
| 3-6 months | 40 | 4.30 | 4.504504505 | 94.37 |
| more than 6 months | 26 | 2.80 | 2.927927928 | 97.30 |
| permanently | 24 | 2.58 | 2.702702703 | 100.00 |
| Total Valid | 888 | 95.48 | 100 | |
| Total Missing | 42 | 4.52 | | |
| Total | 930 | 100.00 | | |

**Table 6: Frequency analysis of the "Occupation" variable**

| Occupation | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Student | 204 | 21.94 | 22.92 | 22.9 |
| Self employed | 62 | 6.67 | 6.97 | 29.9 |
| Employed | 178 | 19.14 | 20.00 | 49.9 |
| Housewife | 394 | 42.37 | 44.27 | 94.2 |
| Retired | 24 | 2.58 | 2.70 | 96.9 |
| Unemployed | 28 | 3.01 | 3.15 | 100.0 |
| Total Valid | 890 | 95.70 | 100.00 | |
| Total Missing | 40 | 4.30 | | |
| Total | 930 | 100.00 | | |

According to this study and based on the above results, the answers to the research questions are: Most Lebanese consume a vegetarian diet temporarily for health and religious reasons mainly. And yes, people who consume a vegetarian diet in Lebanon believe that this diet can cure, prevent and relieve symptoms of disorders.

The researcher looked further into the type of health problems that the population is concerned with and how a vegetarian diet affects certain ailments and health concerns. By examining the data in table 2, 25.68% of the sample was concerned about general health problems and fatigue, while 15.10%, 24.31% and 12.75% were concerned with weight loss, high blood lipids and digestive problems respectively.

Table 3 shows the response to the question: How did a vegetarian diet affect the healing process? The majority felt better generally(47.80% ) and had gradual relief of their symptoms (16.83%). In addition, only 4.18% felt that this diet had no or bad effect on them. (As a side note, most of the 'bad' effects were not grave: hunger, dizziness or uneasiness with cutting out meat). An encouraging 13.50% indicated that this diet helped them lose a lot of unwanted weight, while 10.50% reduced their medication intake.

## Discussion and Conclusions

According to this study where both hypotheses H1 and H2 were accepted, the researcher concluded that most Lebanese adopt a type of vegetarian diet or are interested in this lifestyle for a temporary period and mainly for religious and health reasons. They also feel it has a positive effect on their health. This conclusion is based on the following reasons:

• Some people in Lebanon have resorted to vegetarian food for religious reasons, mainly Christians (during Lent period and Wednesdays &/or Fridays throughout the year).

• Fewer Lebanese have adopted vegetarianism based on certain principles and a belief system like animal rights activists or simply losing confidence in the sources of their meat or dairy products and correspondingly their safety to be consumed [10]. This has been happening in the recent years after exposing suppliers' and distributors' unethical and unhygienic practices on national TV news.

• In Lebanon, a fair percentage of the sample surveyed have adopted this diet since they themselves or their relatives suffer from ailments and found this diet to have a positive effect in relieving some symptoms, generally feeling better and reducing the intake of certain medications. Many others found a vegetarian diet (if not permanently, at least at certain periods) to be a good complementary lifestyle to their conventional therapies.

• Historically speaking, Arabic medicine roots from this region and is based on herbal and other ancient home remedies encouraging the consumption of more vegetarian food in combination with herbal medicine in several treatment aspects. Most people in Lebanon find it easier to surrender to the westernized lifestyle , modern medicine and taking little part in the treatment process. Relieving symptoms as quick as possible by taking medication seems to be a habit. Changing your diet and removing meat products seems very challenging and limiting to most of them since it entails taking one's health into one's own hands, making major diet and lifestyle changes, not to mention amending the menu for weekend family barbeques (which seems to be a hobby for many) and changing habits while tolerating some withdrawal symptoms like hunger and cravings. Therefore, from the health point of view, a vegetarian diet (specially the semi-vegetarian or lacto-vegetarian) will most likely be adopted by Lebanese during certain periods and not permanently, usually in cases of religious purposes (Christian Lent) and major illnesses that mandate the abstinence of meat and high fat dairy product for a certain period of time. Rarely will few Lebanese adopt being strict vegans on a more permanent basis. Thus, the researcher concluded that many people in Lebanon look upon vegetarianism as a temporary diet rather than a permanent one or to be applied a few times a week/month.

This research implies that most people in Lebanon are more interested in its health, religious and diet facets. This can be emphasized since a vegetarian diet in general has several positive effects on a person's health status even when a disorder is involved. Contrary to modern belief, a vegetarian diet (rich in whole grains and beans) provides more strength and endurance than a modern meat and sugar diet. In many cases, it reduces the need for medication, slowly relieves some undesirable symptoms, improves general well-being and decreases the need for conventional medical therapies. Several medical doctors praise the vegetarian diet for its low fat, sugar and caloric properties. In addition, a vegetarian diet is high in fiber and complex carbohydrates. When you omit processed foods, you begin to strengthen your immune system. Vegetarian diets offer a number of advantages, including lower levels of saturated fat, cholesterol, and animal protein with higher levels of carbohydrates, fiber, magnesium, boron, folate, antioxidants such as vitamins C and E, carotenoids, and phytochemicals [ 9]. These diets also provide health benefits in the prevention and treatment of certain ailments (specifically hypertension, hypercholesterolemia, diabetes, etc) . The key to reaping the benefits of a vegetarian diet is in the understanding of the phrase "appropriately planned," meaning, identifying the key nutrients deficient and finding ways to supplement them.

On the other hand, the major concerns are that strict vegetarian diets (like vegans) may be low or lacking in protein, Vitamin B12, calcium, omega 3, iron, and Vitamin D. So there are certain key points to consider for avoiding the drawbacks of a vegan diet. Lacto -ovo and semi-vegetarian diets are at a very low risk of developing these nutrient deficiencies.

Vegetarians could easily meet their protein needs by eating a varied diet, as long as they consume enough calories to maintain their weight. It is not necessary to plan combinations of foods. A mixture of proteins throughout the day will provide enough essential amino acids [11]. Thus complementary proteins (i.e. rice and beans) do not need to be consumed at the same meal [14]. Most importantly, the quality of plant protein varies: whereas soy protein can meet protein needs as effectively as animal protein, wheat protein eaten alone may be 50% less usable than animal protein [15]. So for semi-vegetarians, seafood, especially white fish and sometimes salmon or tuna, if consumed 1-3 times per week, will benefit the diet with a good source of protein and omega 3 fatty acids. In general, sources of protein for all vegetarians should include beans, lentils, tofu, nuts, seeds, tempeh, chickpeas and peas. In addition, whole grain bread, cereals, low fat dairy and other common foods may also add to protein intake.

Iron needs will vary most likely from individual to individual based on the makeup of their overall vegetarian diet. Recommended iron intakes for vegetarians are 1.8 times those of non-vegetarians because of lower bioavailability of iron from a vegetarian diet [11]. Iron sources for vegetarians include dried beans, tofu, lentils, tempeh, spinach, chard, baked potatoes, cashews, dried fruits, bulgur, and iron-fortified foods (such as cereals,

instant oatmeal, and veggie “meats”). Plant foods contain only non-heme iron, which is more sensitive than heme iron to both inhibitors and enhancers of iron absorption. Inhibitors include phytate, calcium, teas, coffee, cocoa, and fiber, while enhancers include vitamin c and other organic acids. To increase the amount of iron absorbed at a meal, eat a food containing vitamin C, such as citrus fruit or juices, tomatoes, or broccoli. Using iron cookware also adds to iron intake [16 ].

Calcium, the main mineral in bones, plays an important role in bone health. Children whose diets are low in calcium may develop osteoporosis as adults and have a greater risk of breaking bones. Some studies, although not all, have shown that older adults with a high calcium intake have stronger bones and a lower fracture risk. There is a limited number of studies on vegans, most of which find low bone density as well as low calcium intakes[19-20]. One study, where vegans had calcium intakes close to recommended levels, found that calcium was well-absorbed from a vegan diet[21]. Calcium is present in many plant foods and fortified foods. Low oxalate greens (bokchoy, broccoli, Chinese/Napa cabbage, collards, kale, okra, turnips greens) provide calcium with high bioavailability (49-61%) in comparison with calcium fortified juices, tofu, and cow’s milk (31-32%), and with fortified soymilk, sesame seeds, almonds, and red and white beans (21-24%) [17]. However, oxalates present in some foods can greatly reduce calcium absorption, so vegetables that are high in oxalates, such as spinach and beets are not good sources of usable calcium despite their high calcium content [11]. The ADA recommends that vegetarians meet the recommended intakes for calcium by consuming at least eight servings per day of foods that provide 10-15% of the adequate intake for calcium as indicated in the Vegetarian Food Guide Pyramid (see Appendix I). For vegetarians who do not want to include dairy products in their diet, they are advised to consume calcium-enriched products (like orange juice and rice milk), leafy green vegetables, grains, nuts, tofu, pumpkin seeds, and soy drinks.

It’s not enough to have a high-calcium diet; adequate vitamin D is needed for calcium to be absorbed. Vitamin D is necessary throughout life to help build strong bones in childhood and adolescence and to maintain bones throughout adulthood[19]. Vitamin D status depends on sunlight exposure and intake of vitamin D fortified foods or supplements. Sun exposure to the face, hands, forearms and legs for 5-15 minutes per day during the summer is believed to provide sufficient amounts of vitamin D for light skinned people, while darker skinned people require longer exposure [18 ]. Nevertheless, many factors, including season, time of day, age, sunscreen use, and pollution, can interfere with this production. Some vegetarian food that is fortified with vitamin D includes soymilk, rice milk, and some breakfast cereals. Therefore, if sun exposure and intake of fortified foods are insufficient, then vitamin D supplements are recommended [13].

Despite the fact that vitamin B12 has a low recommended daily intake, it is still an essential nutrient (with undesirable deficiency symptoms) encouraging vegetarians to familiarize themselves and consume a variety of good sources. Fortified foods, such as some brands of cereal, nutritional yeast, soymilk, or veggie “meats,” are good non-animal sources [11]. A balanced vegetarian diet may also contain tempeh and natto (forms of fermented soybeans) that are rich in Vitamin B12. To be on the safe side, vegetarians should consume a supplement, fortified food, dairy product, or eggs to meet recommended intakes of vitamin B12 especially pregnant, lactating women and for breastfed infants if the mother’s diet is not supplemented. Tempeh, miso, sea vegetables, and other plant foods are sometimes reported to contain vitamin B12. These products, however, are not reliable sources of the vitamin. The standard method for measuring vitamin B12 in foods measures both active and inactive forms of vitamin B12. The inactive form (also called analogues) actually interferes with normal vitamin B12 absorption and metabolism [22]. When only active vitamin B12 is measured, plant foods including fermented soyfoods and sea vegetables do not contain significant amounts of active vitamin B12 [23].

The researcher truly believes that a well-balanced vegetarian or at least a semi-vegetarian diet will be successful in Lebanon and the market for its organic and meat-alternative products will grow noticeably in the near future. If not abiding 100% with a vegetarian diet, a well-balanced diet based mostly on plant-based food, could simply be applied, most essentially: eating organic seasonal food, mostly vegetarian food (whole grains, beans, legumes, seaweeds, vegetables), eating according to our seasonal needs, exercising, avoiding fast food and processed food, etc.

Therefore, the Lebanese government and health agencies should:

- Support organized import and export regulations regarding organic foods, meat-alternatives and dairy-substitutes.
- Encourage farmers to grow organic food and to produce meat and dairy alternatives.
- Cooperate with local and international vegetarian associations or experts to organize workshops, conferences and research programs.

## Summary and Overall Recommendations

People who are interested in a vegetarian diet or are knowledgeable about it believe that this diet can improve their general well-being, yet find it difficult to find healthy meat/dairy alternatives and to follow a balanced nutrient-rich diet. Therefore, providing them with healthy substitutes and simple tips would be very beneficial. The following are some substitutes for animal products available in natural foods stores, Asian food stores or specified aisles in big supermarkets :

****Meat substitutes in soups or stews :**
- Tempeh (cultured soybeans with a chewy texture)
- Tofu (a bean curd; freezing and then thawing gives tofu a meaty texture; tofu will turn slightly off-white in color)
- Wheat gluten or seitan (made from wheat and has the texture of meat; great for vegan 'shawarma' )

****Egg replacers (binders)**
- Ener-G Egg Replacer (or similar products)
- 1 small banana for 1 egg (great for cakes & pancakes)
- 2 Tablespoons cornstarch or arrowroot starch for 1 egg
- ¼ cup tofu for 1 egg (Blend tofu smooth with the liquid ingredients before they are added to the dry ingredients)

****Dairy substitutes in cooking**
- Soymilk
- Rice, coconut, almond, and other nut milks
- Rice cheese, almond cheese or soy based cheese
- Soy margarine
- Soy or almond yogurt
- Soy sour cream
- Spreadable tofu (mashed and flavored with thyme, olive oil or other flavors; great in sandwiches)

To maximize production of DHA and EPA (omega-3 fatty acids found in fish and made by our bodies), include good sources of alpha-linolenic acid in your diet. Alpha-linolenic acid is found in flaxseed, flaxseed oil, canola oil, tofu, soybeans, and walnuts. You can also obtain DHA directly from foods fortified with DHA from microalgae (in some brands of soymilk) and supplements containing microalgae-derived DHA.

In conclusion, it is imperative that practitioners educate patients on the importance of maintaining proper nutrition, keeping continuous surveillance for signs of nutritional deficiencies and to never avoid necessary medical consultation. If you choose a vegetarian lifestyle, consuming yeast extracts, soy products, spreads without animal fats and enriched whole grains is helpful. In that case, you could also add high quality supplements depending on your need like a multivitamin, B Complex vitamins, vitamin B12, vitamin D, calcium, magnesium, iron or omega 3 fatty acids.

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## Appendix 1

# The Vegetarian Food Pyramid

**Guidelines for Healthful Vegetarian Diets**

- Variety of plant foods in abundance
- Emphasis on unrefined foods
- Healthy range of fat intake
- Adequate water and other fluids
- Regular physical activity
- Moderate sunlight exposure

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* A reliable source of vitamin B12 should be included if no dairy or eggs are consumed.

**Other Lifestyle Recommendations**

**Daily Exercise**

**Water**—eight, 8 oz. glasses per day

**Sunlight**—10 minutes a day to activate vitamin D

| Calories/day ▶ | 1600kcal/day | 2000kcal/day | 2500kcal/day | 1600kcal/day | 2000kcal/day | 2500kcal/day |
|---|---|---|---|---|---|---|
| Food Groups | vegan servings/day | | | lacto-ovo servings/day | | |
| Whole Grains | 5 | 7 | 12 | 5 | 6 | 9 |
| Legumes and Soy | 3 | 3 | 3 | 3 | 3 | 3 |
| Vegetables | 6 | 8 | 9 | 6 | 8 | 9 |
| Fruits | 3 | 4 | 4 | 3 | 4 | 4 |
| Nuts and Seeds | 2 | 2 | 2 | 1 | 1 | 2 |
| Vegetable Oils | 1 | 2 | 2 | 1 | 2 | 2 |
| Dairy Products | 0 | 0 | 0 | 2 | 2 | 2 |
| Eggs | 0 | 0 | 0 | 1/2 egg | 1/2 egg | 1/2 egg |
| Sweets | Optional | | | | | |

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# Non-Compliance to Antihypertensive Treatment among Patients Attending Prince Zaid Military Hospital

**Lana Sati Goussous (1)**
**Nashat Ayoub Halasah (1)**
**Manhal Halasa (2)**

(1) Royal medical Services, Jordan
(2) Manhal Halasa, MD, Epidemiologist at World Health Organization

**Correspondence:**
Lana sati Goussous, Msc Pharm,
Royal Medical Services
Jordan
**Email:** halasah@yahoo.com

## Abstract

**Hypertension is considered as one of the most frequent chronic illnesses and the most important cardiovascular risk factor in developed countries. Despite the fact that many advances in the management of hypertension have been made, still noncompliance with prescribed therapeutic drugs is considered a major barrier in clinical control and management of hypertension drug therapy.**

**This study aimed to determine the most prevalent factors related to non-compliance to antihypertensive treatment.**

**Design: A questionnaire-based cross-sectional study focused on factors thought to be responsible for non-compliance with hypertensive medication, in patients referred to out-patient medical clinic at Prince Zaid Military Hospital, Jordan.**

**Participants: 471 patients attended the out-patient medical clinic during the period from June, 2011 - December, 2011.**

**Results: The study revealed that about 24% of the enrolled patients were non-compliant to the hypertensive treatment in which (80.7%) reported that lack of information regarding importance of taking drugs, drug prescription regimen for more than one dose per day accounted for (71.9%) while primary and secondary education levels (70.2%) were more than the illiterate and higher education. The number of medications among non-compliant patients accounted for (62.2) for more than one medication and unavailability of drug (59.6%), forgetfulness (55.3%) and drug side effects (50.9%) and absence of symptoms (44.7 %) was the least reported factor of non-compliance.**

**Key words: Hypertension, Compliance, non-compliance.**

## Introduction

Hypertension is one of the most common disorders in the world. For some patients with hypertension, blood pressure can't be adequately controlled despite treatment with antihypertensive drugs (1). Such patients have treatment resistant hypertension, which is according to one definition: persistent high blood pressure > 140/90 mmHg for patients aged less than or equal to 60 years, or 160/90 mmHg for those aged more than 60 years (2). Various explanations have been given for treatment resistant hypertension; these include secondary hypertension, endogenous resistance to treatment, and noncompliance to treatment (2), for which the last reason is the most prevalent ( 3). Patients' poor compliance with treatment is often suggested as the reason for lack of response to antihypertensive drugs and causes reduction of benefit provided by these drugs. Consequently, prescription of additional unnecessary drugs that might cause health care costs to be increased through unnecessary investigations, and dose adaptation for patients who aren't taking their drug adequately or potential increase of the number of hospitalizations (4).

Identifying factors associated with noncompliance will help set the strategies to enhance compliance.

**Definition of Terms**

For the purpose of this study, terms were theoretically and operationally defined:

Hypertension was theoretically defined as the persistent high arterial blood pressure reading of 140/90 mmhg for those aged below 60 years and 150/100 mmhg for those aged above 60 years (2), and hypertension was operationally defined as the presentation of high blood pressure> 140/90 mmhg for Patients aged <60years or > 160/90 mmhg for those aged > 60 years) as measured by the sphygmomanometer with the patient lying down 5 minutes at least after being in the clinic.

Compliance: The general term was defined by the World Health Organization in their 2001 meeting as, "the extent to which a patient follows medical instructions". With respect to the drug therapy, compliance is defined as the degree of correspondence of the actual dosing history with the prescribed drug regimen (5). Compliance rate was estimated as

$$\frac{\textit{No. of pills missed}}{\textit{No. of prescribed pills in the same period}} \; *100\%$$

Non-compliance: was defined as the deviation of the dosing history from the drug regimen (5), and those who reported irregularity in taking their antihypertensive treatment and compliance rate below 80% was considered to be noncompliance.

**Purpose of the study:**

The purpose of this study was to identify factors responsible for non-Compliance with the treatment of patients with Hypertension.

## Methodology

A Cross- Sectional Study Design was used for the purpose of this study; 471 hypertensive patients attended the out-patient clinic at Prince Hashim Hospital during the period from June, 2011 - December, 2011. All patients diagnosed with hypertension and willing to be enrolled in this study after obtaining informed consent from each patient, were interviewed using a structured questionnaire form. The first part of data collection form included information about gender, age, educational level and information regarding aspects of hypertension treatment, such as disease duration, number of drugs taken for hypertension (1, 2 or > 2 drugs), drug regimen (once, twice or more than twice per day). The second part of the questionnaire consisted of a list of factors thought to be responsible for non-compliance and the patient was expected to select their own reason for being non-compliant. These factors included: lacking information regarding importance of taking drugs, absence of symptoms, non-availability of drug, drug side effects and forgetfulness.

Non-compliance hypertensive patients were defined as those with raised blood pressure of more than or equal to 140/90 mmHg on two prior clinical visits. Patients who had a systolic blood pressure of less than 140 mmHg and/or Diastolic blood pressure of less than 90 mmHg were considered to have a controlled blood pressure and compliant to the treatment.

## Results

The study revealed that about 24% of the enrolled patients were non-compliant to the antihypertensive treatment and among those (80.7%) reported that they don't have enough information about their disease and lack of information regarding importance of taking drugs given to them by health care team (nurse or doctor). Drug prescription regimen was viewed as the 2nd reason behind non-compliance which attributed to drug prescription regimen as a strong factor harboring their compliance with their treatment (71.9%) while non-compliance among primary and secondary education levels (70.2%) were more than the illiterate and higher education. The number of medications among non-compliance accounted for (62.2) for more than one medication and unavailability of drug (59.6%), forgetfulness (55.3%) and drug side effects were (50.9%) and absence of symptoms (44.7 %) was the least reported factor of non-compliance.

The mean age of participants was 59 years (SD 11.18) and the age group of more than 60 years comprised 56.7% of the cases. There was no gender difference among non-compliant patients to antihypertensive medication.

**Table 1: Distribution of hypertensive patients by their compliance to Treatment**

| Compliance | Frequency | Percent |
|---|---|---|
| Compliant | 357 | 75.8% |
| Non-Compliant | 114 | 24.2% |
| Total | 471 | 100% |

**Table 2: Compliance rate in relation to Socio-demographic factors**

| Factor | Compliant | | Not Compliant | | TOTAL | | P value |
|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | |
| **Gender** | | | | | | | |
| Female | 198 | 77.6 | 57 | 22.4 | 255 | 54.1 | >0.05 |
| Male | 159 | 73.6 | 57 | 26.4 | 216 | 45.9 | |
| **Age Group** | | | | | | | |
| < 40 | 24 | 88.9 | 3 | 11.1 | 27 | 5.7 | |
| 40 - 60 | 135 | 76.3 | 42 | 23.7 | 177 | 37.6 | >0.05 |
| > 60 | 198 | 74.2 | 69 | 25.8 | 267 | 56.7 | |
| **HTN Duration** | | | | | | | |
| < 5 Years | 137 | 38.4 | 34 | 29.8 | 171 | 36.3 | >0.05 |
| >5 Years | 220 | 61.6 | 80 | 70.2 | 300 | 63.7 | |
| **Education** | | | | | | | |
| Illiterate | 56 | 69.1 | 25 | 30.9 | 81 | 17.2 | |
| Primary School | 256 | 76.2 | 80 | 23.8 | 336 | 71.3 | >0.05 |
| High Education | 45 | 83.3 | 9 | 16.7 | 54 | 11.5 | |
| **Drug Regimen** | | | | | | | |
| 1 | 126 | 79.7 | 32 | 20.3 | 158 | 33.5 | |
| 2 | 154 | 70.6 | 64 | 29.4 | 218 | 46.3 | <0.05 |
| 3 | 77 | 81.1 | 18 | 18.9 | 95 | 20.2 | |
| **Knowledge** | | | | | | | |
| No | 94 | 50.5 | 92 | 49.5 | 186 | 39.5 | <0.05 |
| Yes | 263 | 92.3 | 22 | 7.7 | 285 | 60.5 | |
| **No Symptoms** | | | | | | | |
| No | 52 | 50.5 | 51 | 49.5 | 103 | 21.9 | >0.05 |
| Yes | 305 | 82.9 | 63 | 17.1 | 368 | 78.1 | |
| **Drug Availability** | | | | | | | |
| No | 97 | 58.8 | 68 | 41.2 | 165 | 35.0 | <0.05 |
| Yes | 260 | 85.0 | 46 | 15.0 | 306 | 65.0 | |
| **Drug Side Effects** | | | | | | | |
| No | 260 | 82.3 | 56 | 17.7 | 316 | 67.1 | <0.05 |
| Yes | 97 | 62.6 | 58 | 37.4 | 155 | 32.9 | |
| **Forgetfulness** | | | | | | | |
| No | 272 | 84.2 | 51 | 15.8 | 323 | 68.6 | <0.05 |
| Yes | 85 | 57.4 | 63 | 42.6 | 148 | 31.4 | |

## Discussion

Patients involved in this study were middle aged to elderly hypertensive men and women who had the disease for several years. The study was based on the self-reporting estimation, which was the only available and accessible method that could be used since the electronic method is not available and pill counting method is thought to be overestimating compliance. Finding of this study revealed a variety of results and associated factors which influence the compliance behavior among patients with hypertension. The major cause of noncompliance was lack of information and knowledge on need for regular antihypertensive treatment which was consistent with findings of a similar study in Nigeria (6) and in a qualitative study conducted on seven focus groups attending two primary health care centers of the Spanish national health services, in an attempt to identify factors of noncompliance, factors were identified that influence noncompliance. Lack of basic background knowledge about hypertension and patient fear and negative images of antihypertensive drugs, lack of basic knowledge background, was explained by the previous study and the explanation that was also thought to explain the findings, is that clinical encounter was viewed as unsatisfactory because of its length and low patient-physician interaction time that resulted from overwhelming number of patients attending the clinic (7). No relation between age and compliance rate was found (P-value not significant, 0.23) which is inconsistent with a study done in Saudi Arabia which showed a higher compliance rate among those > 55 years of age (48.5%) (9). Another study in Ghana showed a higher compliance rate in age group 40-60 years (68%) and a decreased rate in those less than 40) years and above 60 years (6%, 33% respectively) (10), and is compatible with a study done in Shiraz, Iran. (11)

There is a decrease in compliance rate in those patients with primary and secondary school education (70.2%) while no significant difference among those with higher education and non-educated patients which is inconsistent with two studies done in Ghana (9) and Saudi Arabia (8) showing that compliance rates in educated patients were 18% and 33 %respectively and consistent with two studies in Finland (11) and Nigeria (6) showing high compliance rate in educated patients (81.5%,74.2% respectively). These differences could be due to the characters of patients attending these health care centers while most of our patients were primary and secondary education and the least were highly educated.

It is well known that compliance is improved if the patient is taking a single drug rather than two or more (11). This study showed that those on single medication were more compliant (79.7%) than those on more than one drug which is compatible with a study in Sudan (12) and Saudi Arabia (8), which showed compliance rate with one drug of (80.8% and 78.9% respectively).

A higher rate of non-compliance was seen in those patients who had been hypertensive for more than 5 years and decreased rate with less than 5 years which is contradicting the findings of Mallon JM (13), who showed that 54-83% of patients were more compliant after 5 years from start of their medications. The fact that patients think that they have been cured so they were not regularly taking their medication due to the absence of symptoms only (17.1%) were non-compliant to antihypertensive treatment compared with a study in the United States (14) which showed that (46%) were non-compliant while the same study found that non - compliance due to side effects was (11%) compared to what was found in this study (37.4).

## Conclusion and Recommendations

Blood Pressure control remains an essential therapeutic approach to prevent the occurrence of coronary heart disease, heart failure, stroke and premature death. Compliance with treatment is a fundamental prerequisite for therapeutic benefit. Strategies to overcome the barriers perceived by the patient and hinder their compliance should be set as a priority. To provide sufficient information about hypertension, risks and treatment, must be considered. To plan to prescribe a drug regimen that is effective, long acting drugs that provide blood pressure control beyond the 24 hour dosing period might help to prevent the consequences of occasional drug omission. In addition, increased physician -patient interaction and awareness of health status are essential.

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# Women's health Aspect In Humanitarian Missions And Disasters: Jordanian Royal Medical Services Experience

**Fatima Al-Odwan**
**Suhair Wreikat**

Specialist of obstetric and gynecology,
Royal Medical Services
Jordan

**Correspondence:**
Fatima Al-Odwan
Suhair Wreikat
Specialist of obstetric and gynecology,
Royal Medical Services
Jordan
**Email:** mkateeb@lycos.com

## Abstract

**Objective:** To review women's health problems in patients who presented to Royal Medical Services humanitarian missions over a 3 year period.

**Design and method:** Analysis of humanitarian missions of RMS data and records over three year period (2009-2011) in regards to women's health issues, was done. The data were analyzed in regards to number of women seen, the presenting conditions, and prevalence of domestic violence in these cases.

**Results:** During the 3 year period 72 missions were deployed to 4 locations ( Gaza, Ram Allah -West Bank, Jeneen-West Bank, and Iraq). Total numbers of females seen in this period was 86,436 women accounting for 56% of adults patients seen by RMS humanitarian missions. Acute injuries were responsible for 32% of the cases, chronic diseases for 52% and women's health issues for the rest. Domestic violence was encountered in 11% of the cases. Pregnancy related problems were the main reason for presentation (38%). Contraception was the second reason for seeking help and was seen in 25% of cases.

**Conclusion:** Women's health care providers are needed to advise, assist, and support public health authorities in planning for and serving during a disaster. Emergency preparedness is essential to maintaining healthy pregnancies and ensuring good outcomes for pregnant women and their infants who endure disasters.

**Key words:** women's health problems, humanitarian missions, Royal Medical Services (RMS).

Gender can also place women and men at different risks of disaster. Women suffer in the aftermath of disasters when social networks are frayed, when family and kin are displaced, and when they feel the cumulative effects of caring for others including for men and boys, are not well served by disaster mental health care and facilities.

Examples from previous disaster events demonstrated this gender difference: In 1976, in the technological disaster of Seveso, Italy, the population was exposed to dioxin. Biologic differences between the sexes were seen: 15 years later, more men died of rectal and lung cancer, whereas more women died of diabetes. In the Indian Ocean tsunami in 2004, the ratio of deaths between women and men was 3:1 because men were stronger, women had not learned to swim, and women's long hair got entangled in debris.

In the 1993 earthquake in Maharashtra, India, more women and children died than men because the women were in the homes, whereas the men were out in the fields. Conversely, social roles determined that men were more affected than women during the 1985 Chernobyl disaster. The soldiers and male civilians predominantly cleaned up the site and as a result were exposed to more radiation. Cultural norms have prevented women from seeking help after a disaster, especially in certain regions where interacting with men is strictly forbidden. (2) Social norms have demonstrated that women bear more of the responsibility of caring for children, elderly, and the sick or injured.

Women also face an increased risk of domestic violence: Studies have found that there are many more calls to women's shelters as much as year after an emergency, the aim of this review is to study the effect on disasters on women's health. Royal Medical Services has been involved in more than 100 humanitarian missions over the last 15 years in more than 15 locations all over the world. The aim of this study is to review women's health problems in patients presented to RMS humanitarian missions over a 3 year period.

## Patients and Methods

Analysis of humanitarian missions of RMS data and records over a three year period ( 2009-2011) in regards to women health issues was done. The data were analyzed in regards to number of women seen, the presenting conditions, and prevalence of domestic violence in these cases. During 3 years period 72 missions were deployed to 4 locations ( Gaza, Ram Allah -West Bank, Jeneen-West Bank, and Iraq).

## Results

Total number of females seen in this period was 86,436 women accounting for 56% of adult patients seen by RMS humanitarian missions. Table 1 shows the age distribution of these women, and Table 2 shows the presenting conditions.

| Age | | Percentage % |
|---|---|---|
| 16-20 | | 8 |
| 21-25 | | 14 |
| 26-30 | | 12 |
| 31-35 | | 14 |
| 36-40 | | 19 |
| 41-45 | | 17 |
| 46-50 | | 9 |
| 51-56 | | 7 |

**Table 1: Age of women**

| Condition | Number | Percentage % |
|---|---|---|
| Chronic diseases | 44946 | 52 |
| Women's health conditions | 13829 | 16 |
| Acute injury | 27560 | 32 |

**Table 2: Condition of presentation**

| Condition | Number | Percentage % |
|---|---|---|
| Pregnancy related problems | 5255 | 38 |
| Contraception | 3457 | 25 |
| Menstrual problems | 2904 | 21 |
| Genital infections | 815 | 5.9 |
| Infertility | 165 | 1.2 |
| STD | 290 | 2.1 |
| Others | 940 | 6.8 |

**Table 3: Women's Health condition**

Acute injuries were responsible for 32% of the cases, chronic diseases for 52%, and women's health issues for the rest. Domestic violence was encountered in 11% of the cases. Pregnancy related problems was the main reason for presentation(38%). Contraception was the second reason for seeking help and was seen in 25% of cases. Menstrual related problems were responsible for 21% of cases, and genital infections were responsible for 8% of cases. Among them STD was not prevalent in the women who presented (only 2.1%). Surprisingly infertility problem was the main cause of presentation in 3% of cases.

## Discussion

Pregnant women, newborns, and infants may be disproportionately harmed by natural disasters. The lack of resources, such as food and clean water, lack of access to health care and medications, as well as psychologic stress in the aftermath of disasters increase pregnancy-related morbidities. After Hurricane Katrina, the Centers for Disease Control and Prevention found that the 14 Federal Emergency Management Agency designated counties and parishes affected by the hurricane had a significant increase in the number of women who received late or no prenatal care. In the designated counties in Mississippi, the percentage of inadequate prenatal care increased significantly from 2.3% to 3.3% (3). In Louisiana, among Hispanic women, it increased from 2.3% to 3.9% (3). Infants who were born to pregnant women living within a 2-mile radius of the World Trade Center on 9/11 were found to have a higher rate of intrauterine growth restriction, decreased birth weight, and a small head circumference . In a study that monitored birth outcomes following Hurricane Katrina, women who experienced three or more severe traumatic situations during the hurricane, such as feeling as though one's life was in danger, walking through flood waters, or having a loved one die, were found to have a higher rate of low birth weight infants and an increase in preterm deliveries. Additionally, disruption of the health care system may result in the separation of mothers and infants. For example, during Hurricane Katrina, many critically ill hospitalized infants were transported to medical facilities outside of New Orleans without their mothers. The separation of mothers and their infants can interfere with breastfeeding as well as create additional stress for the mothers.

These pregnancy morbidities can be prevented by developing an emergency plan that addresses them. As providers of women's health care, the involvement of the obstetrician-gynecologist in disaster response is essential. This can be done at the local level through a hospital emergency preparedness committee or a community group attached to the fire department or police department and at the state level.

**Disaster Preparedness for the Health Care System and Providers Caring for Pregnant Women**

Although a "one-size fits all" emergency plan is difficult to apply to all disasters, there are common distresses experienced by all pregnant women regardless of the nature of the disaster. Pregnant women should be encouraged to develop evacuation plans in the event there is enough forewarning to allow for evacuation. The Red Cross provides emergency preparedness checklists for specific disasters. However, when evacuation is not possible, the health care for women in the antepartum, intrapartum, and postpartum periods needs to be safely managed. For women in the antepartum period, maintaining prenatal care is of utmost importance. Health care providers outside the perimeter of the disaster should be willing to accept evacuees in an effort to ensure continuation of prenatal care. State and local governments should establish local facilities where prenatal care and obstetric services can be provided for those women unable to evacuate. Accessing prenatal records is important in maintaining prenatal care. This will be impossible if written records are destroyed because of the disaster or if interruption in electricity prohibits access to electronic medical records. In preparation, clinicians should make patients aware of their specific prenatal issues as well as provide them with key portions of their medical records. This is especially true in areas where natural disasters are seasonal and may be likely to occur. Also, health care providers of prenatal care should increase patients' awareness of the signs of preterm labor and other obstetric emergencies and the action to take in the event of these emergencies.

Obstetric care at a designated facility is ideal, and it is the role of public health officials in an area to designate and equip obstetric care facilities, publicize which facilities in a given area will offer obstetric services, identify alternative safe delivery sites, and arrange for the staffing of the facilities. Individual obstetric care providers are urged to assist public health officials and to practice within the obstetric care system that is established. However, there are several factors that may contribute to difficulty in accessing obstetric health care facilities during a disaster. The health care system may become inundated with other health emergencies, which could decrease the resources available to pregnant women. Also, physical barriers, such as impassible roads, demolished bridges and fire lines, may serve as obstacles to accessing obstetric care facilities. These hindrances may result in women giving birth outside of health care facilities. To prepare, clinicians should make pregnant women who reside in locations subject to seasonal or frequent environmental emergencies aware of the availability of emergency birth kits . These kits have all of the essential equipment necessary should a birth occur outside of a birthing facility.

During a disaster, women who are not breastfeeding may have difficulty in providing food for their newborns. Some new mothers may plan to bottle-feed their newborns. However, during a disaster, there may not be access to clean water for sterilization of bottles or access to formula. Encouraging and establishing breastfeeding as a part of routine care ensures that mothers are able to feed their newborns in the event of a disaster. Additionally, health care providers should be educated in lactation health care to assist new mothers in initiating breast-feeding in the immediate phase of a disaster. For mothers who are less than 6 months postpartum, even if they

have not previously established lactation, relactation can be established and should be encouraged. For those mothers who choose not to begin relactation or are beyond the 6-month period, ready-to-feed infant formula in a single-serving bottle should be provided.

**Disaster Preparedness for the Health Care System and Providers Caring for Nonpregnant Women**

Providing contraception for postpartum and nonpregnant women during a disaster is also important to prevent unintended pregnancies. Contraception should be provided in the form of emergency contraception as well as prophylactic contraception. Providing condoms allows for the prevention of not only unintended pregnancies but also decreases the transmission of sexually transmitted diseases. For women who are using reversible contraception in the form of pills, the ring, or the patch, these prescription medications should be provided to enable these women to maintain their current form of birth control. When possible, emergency health care facilities should stock and dispense a variety of contraceptive products.

**Mental Health Considerations**

Involvement in a disaster situation causes and exacerbates tremendous anxiety, depression, and grief. Post-disaster, patients and health care providers need to be aware of the signs of mental distress requiring medical attention. The Centers for Disease Control and Prevention offers information and resources for mental health care during and after disasters. This can be accessed at http://www.bt.cdc.gov/mentalhealth/.

**Prevention of Violence Against Women During a Disaster**

Women are subjected to and vulnerable to intimate partner violence and sexual assault during disasters (9, 10). Similar to the conditions found in refugee camps where sexual violence also is increased, during the phases of a disaster women are isolated from their families and without physical protection. The United Nations Refugee Agency, in developing guidelines for prevention and response to sexual violence against refugees, has identified some contributing circumstances: 1) male perpetrators' dominance over female victims, 2) psychologic strains in refugee camps, 3) absence of support systems for protection, 4) crowded facilities, 5) lack of physical protection, 6) general lawlessness, 7) alcohol and drug abuse, 8) politically motivated violence against refugees, and 9) single females separated from male family members (5). Ironically, these same circumstances existed among the Hurricane Katrina evacuees and were likely responsible for the many personal accounts of rape that occurred in evacuation shelters. Establishing safety, order, and the rule of law in shelters for disaster survivors is paramount to the protection of women from sexual assault. In the event that sexual violence does occur, appropriate and sensitive services should be available to victims, including emergency contraception and sexual assault forensic examiners or sexual assault nurse examiners.

## Conclusion

Disasters are unplanned but can be anticipated. Emergency preparedness is essential to maintaining healthy pregnancies and ensuring good outcomes for pregnant women and their infants who endure disasters. Developing an evacuation plan is the first step. However, if evacuation is not possible, identifying local health care facilities that can provide obstetric care, discussing the availability of emergency birth kits, and emphasizing the importance of lactation are key steps to facing the many challenges of a disaster that are unique to pregnant women. Postpartum and nonpregnant women must have access to contraception. Women's health care providers are needed to advise, assist, and support public health authorities in planning for and serving during a disaster. Clinicians also should encourage local and state governments to provide shelters that are safe and secure to prevent violence against women.

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# Increasing incidences of STIs in Pakistani youth; Role of Family Physicians in prevention, treatment and control of STIs

**Manzoor Butt**

**Correspondence:**
Dr Manzoor Ahmed Butt
Trainer and Family Physician
Rawalpindi, Pakistan
**Email:** drmanzoor@ymail.com

## Background

**Sexually transmitted infections (STIs) constitute a major cause of acute illness, infertility, long-term disability and death, with severe medical and psychological consequences for millions of men, women and infants. In Pakistan, the STIs control programme focuses on infections such as syphilis, chancroid, gonorrhoea, chlamydial infection, trichomoniasis, and their associated syndromes. Viral infections like herpes simplex viruses (HSV) and human papilloma viruses (HPV) are also included in these programmes as these are usually transmitted sexually.**

## Introduction

This article describes STIs in Pakistan. STIs are some of the most common causes of illness worldwide. STIs accounted for 87% of all cases, reported among the top 10 most frequently reported diseases in 1995. STIs are more common in developing countries than industrial countries. In many developing countries, STIs rank among the top five diseases.[1] Incidence of STIs is rising despite improved methods of diagnosis and treatment. [2] There are 333 million new cases of STIs (excluding human immunodeficiency virus (HIV) and AIDS) per year globally. In 1995 in South East Asia alone an estimated 150 million new cases occurred [3].

## Epidemiology and Current Situation in Pakistan

It is usually said that the incidence of STIs in Pakistan is very low among the general population. The author does not agree with this statement. In fact, there is no exact data available about STIs in Pakistan as these are not notified to any authority. There is no STIs reporting system in Pakistan and therefore information about STIs prevalence is limited.[4] Gonorrhoea and syphilis are more common STIs in Pakistan [5], but gonorrhoea is the most pressing and emerging infection in the youth and very young boys of our communities.

## STIs and IUDs

Pakistan is facing a growing problem of drug abuse for the last few decades posing significant social and health risks. In a health survey on drug abuse in 1993, there were three million drug users in the country, with an estimated growth rate of 6.4% per year. [6] In 2004 nearly five million IDUs were there in Pakistan. [7]

According to the recent studies there is an increasing shift from oral route and inhalation to injectable drugs use among addicts, which is quite alarming.[8] Studies in countries like, Russia, Ukraine and India have shown that the increasing scales of injectable drug use puts a large group of individuals at risk of blood born infections through high risk behaviors such as sharing of syringes, shooting drugs in groups, low use of condoms and indulging in commercial sex. [9] The population of drug abusers has been associated with epidemics of STIs specially HIV. Sexually transmitted infections were associated with use of contaminated equipment for injecting drugs and unsafe sex. There is a body of evidence supporting the close association between drug use and STIs. [10]

## Sex contacts

These can be divided into two categories. Commercial Sex Contacts (CCs) and Non-Commercial Sex Contacts. In Pakistan, CCs includes men, women, gays, lesbians, young boys and hijars. They indulge in all types of sexual activities like oral, vaginal sex and anal sex.

Hijars are the most common CCs for youth. They pose real threats to youth because they are cheap and easily accessible. They roam about on the streets and roads of local communities in groups and seduce young boys. It has been observed many of them suffer from anal gonorrhoea and syphilis.

Both male, female and hijars work on a daily basis. They usually go for this work twice daily with different partners and up to five or six on weekends. The most dangerous thing about them is that they hide their STIs and usually avoid taking treatment unless they are quite ill. Mostly their clients include truck drivers, taxi drivers and young students.

## HIV and STIs

The outcome of STIs is further aggravated by their potential to facilitate the spread of HIV infection. The presence of HIV/AIDS also increases the risk of acquiring other STIs. It is therefore very important to bring about the functional integration of services for STIs and HIV/AIDS for achieving better outcomes. The best intervention for controlling either STIs or HIV remains condoms. STI management centers can also serve as portals for condom delivery and for sexual risk counseling.

## Transmission of STIs

STIs are transmitted mainly due to unprotected sexual contacts, vaginal, anal or oral sex. Among the types of sexual contact, anal sex is particularly important. Due to the trauma involved in an anal sex act, there is more inflammation and this leads to more acquisition of STIs particularly HIV. In this regard promotion of condom use is the most effective prevention strategy followed by reduction in partners.

## High Risk behaviour

Sexual and drug use risk behaviors of truck drivers / taxi drivers and their commercial sex contacts (CCs) have been associated with the spread of sexually transmitted infections (STIs) in the developing world. A large proportion of the truck drivers in Pakistan are young and are involved in unsafe sex with their commercial sex contacts. Their CCs include women, men, hijars and even very young boys. The women and men are mostly not trained in safe sex education.

## Why STIs are increasing in Pakistan

**1)** Lack of opportunities of healthy sports and excursions for youth.
**2)** Increasing frustration in youth due to easy access to pornographic material on internet
**3)** Increasing influx of hijars from other areas in local communities
**4)** Increasing number of easily accessible new Female Sex Workers ( FSW) and Male Sex Workers (MSW)
**5)** Increase in the number of Injection Drug Users ( IUDs)

Care seeking for STI symptoms in Pakistan
Care seeking for STIs in Pakistan is similar to much of other care seeking in Pakistan. Most high risk group members seek care from the private sector - mainly general practitioners and non medical personnel. Public sector STI facilities tend to provide services to mainly clients of sex workers and others who acquire STIs from non commercial sex.

Adan Khan and associates conducted a survey to identify care seeking behavior of STIs patients [11]. The author has worked out a graph based on their study. Please see chart next page.

## Management of STIs

The National Guidelines for the Management of Sexually Transmitted Infections [12] suggest syndromic management techniques because these are cost effective and more efficacious. The six major symptom syndromes: Urethral Discharge, Genital Ulcer, Scrotal Swelling, Vaginal Discharge, Lower abdominal pain and Anal symptoms.

## The 4 C's Management Strategy

The 4Cs strategy is promising to improve treatment results and prevention. These include Compliance, Counseling, Condoms and Contact (Partner) Management. The best prevention strategy is to avoid or reduce extramarital sexual contacts, partner reduction and use of condoms. Risk behavior reduction, community based counseling and condom promotion are vital components of these prevention programmes. Family physicians provide the best place for all these tools.

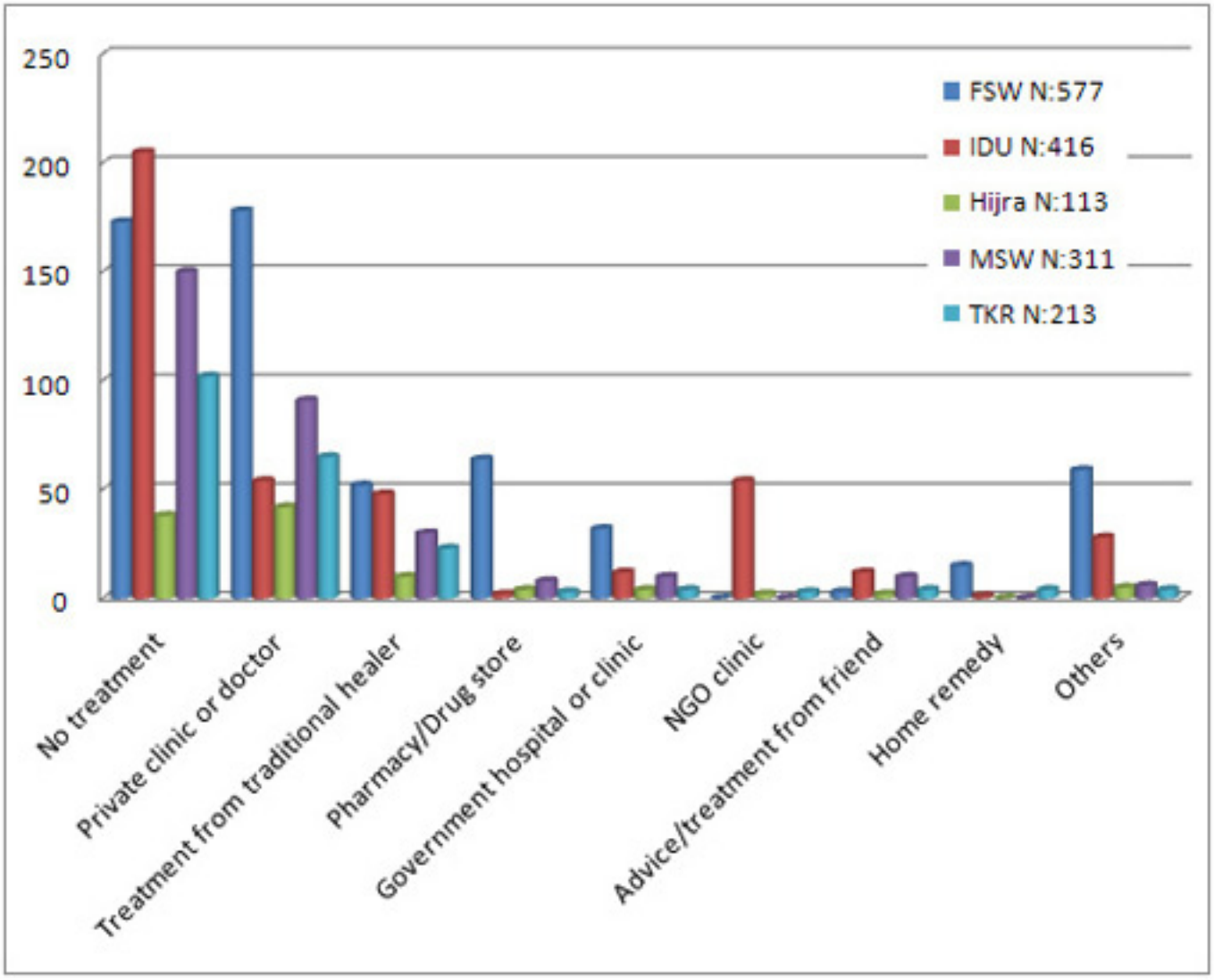
There must be record keeping of patients suffering from STIs. Partner notification can reduce the spread of infections. Treatment should follow the national guidelines and difficult to treat patients should be referred to proper secondary and tertiary management centers. The management programmes must have linkages with reproductive health programmes.

## Drug Resistance in STIs treatment

The drug resistance is emerging very rapidly. Most of the recommended drugs show resistance even in large doses. Recurrence of infections is common. Patients are being treated with a combination of drugs. This problem can only be addressed if patients observe full compliance to medications.

## False Positive Screening tests

The commonly used VDRL screening test gives many false positive tests. This has intense social implications. All recruiting agencies for overseas employment do it for all applicants. The false positive VDRL is ruining lives of especially female applicants as everyone hastily labels them corrupt.




## Conclusion

There is a rapid rise in STIs in Pakistan. The rise in IUDs also poses a continued threat to youth. The sufferers prefer family physicians for advice and treatment because they are easily accessible in their own local communities. There is intense need to train family physicians in the prevention, control and treatment of STIs. There should be counseling facilities at all family clinics. There is an urgent need for record keeping of patients suffering from STIs and partner notification. The best way to avoid STIs is restriction to one partner, use of condoms and reduction in number of IUDs.

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# The Middle East Respiratory Syndrome Coronavirus (MERS-COV)

**Firdous Jahan** (1)
**Ali Abdullah Al Maqbali** (2)

(1) Dr Firdous Jahan,
Associate Professor ,Chair Family Medicine Department, Oman Medical College
Sohar, Sultanate of Oman
(2) Dr Ali Abdullah Al Maqbali, Specialist Public Health, Saham Hospital, Ministry of Health, Sultanate of Oman

**Correspondence:**
Dr Firdous Jahan,
Associate Professor ,Chair Family Medicine Department,
Oman Medical College
Sohar, Sultanate of Oman
Tel:+968-26844004 ext. 311
Mobile:+968 95786705 Fax: +968 26843545
**Email:** firdous@omc.edu.om

## Abstract

**Introduction:** **Middle East Respiratory Syndrome coronavirus (MERS-CoV) , was first identified in 2012 in Saudi Arabia. Coronaviruses are a large family of enveloped, single-stranded RNA viruses that infect a number of different species, including humans. They predominantly cause mild self-limiting upper respiratory tract infections, but can cause pneumonia and serious illness in older people, people with heart disease, diabetes or immune compromised patients. Pneumonia has been the most common clinical presentation and appears to be the result of repeated introductions of the virus.**

**WHO has been informed of an additional laboratory-confirmed case of Middle East Respiratory Syndrome coronavirus (MERS-CoV) in Oman.**

**Case presentation:** **A 59 year old chronic smoker admitted with fever cough and dyspnea. With rapidly progressing symptoms and right sided pneumonia he was shifted to intensive care where he died. The diagnosis of corona virus infection was made after his death when endotracheal aspirate transcriptase polymerase chain reaction (RT-PCR) became positive.**

**Conclusion:** **This infection is a rapidly progressing disease which requires up to date awareness and information regarding its spread and precaution. Urgent epidemiologic investigations are required to better understand the transmission patterns of this virus.**

**Key words:** **Middle East Respiratory Syndrome coronavirus, Oman**

## Introduction and Background

Coronaviruses are a large family of viruses that cause a range of illnesses in humans, from the common cold to the Severe Acute Respiratory Syndrome (SARS); it can infect both animals and humans[1-2].

In September 2012, a novel coronavirus was isolated from a patient in Saudi Arabia who had died of an acute respiratory illness and renal failure[3]. February 2013, 12 laboratory-confirmed cases had been reported with 6 fatalities. This new virus strain is causing sporadic infection in the Middle East. Coronaviruses are a large family of enveloped, single-stranded RNA viruses that infect a number of different species, including humans. They are usually species specific, however interspecies transmission of coronaviruses can occur [4].

The most common initial symptoms reported are fever, cough and shortness of breath. Patients may rapidly progress to severe pneumonia and renal failure[5]. Diagnosis is done by confirmation using reverse transcription PCR (RT-PCR) on Broncho alveolar lavage, sputum and tracheal aspirates [6-7].

A possible case was defined as follows[8]: (i) any patient with a history of travel in an at-risk country, who presented with clinical signs and/or imaging consistent with acute respiratory distress syndrome (ARDS) or pulmonary infection, encompassing fever $\geq$ 38°C and cough within 10 days after return; (ii) any contact of a symptomatic possible or confirmed case, presenting with acute respiratory infection, whatever the severity, with an onset of symptoms within 10 days of the last contact with a possible/confirmed case while symptomatic.

The list of at-risk countries, as defined in European Centre for Disease Prevention and Control (ECDC) rapid risk assessment dated 7 December 2012, included, Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen. A confirmed case is defined as a possible case with a positive MERS-CoV RT-PCR on respiratory samples.

Droplet precautions should be added to the standard precautions when providing care to all patients with symptoms of acute respiratory infection. Contact precautions and eye protection should be added when caring for probable or confirmed cases of MERS-CoV infection. Airborne precautions should be applied when performing aerosol generating procedures.

Patients should be managed as potentially infected when the clinical and epidemiological clues strongly suggest MERS-CoV, even if an initial test on a nasopharyngeal swab is negative. Repeat testing should be done when the initial testing is negative, preferably on specimens from the lower respiratory tract.

Ministry of Health Oman has published a comprehensive assessment of clinical cases as well as infection prevention and control awareness and implementation measures to prevent the possible spread of MERS-CoV in health care facilities. It is important that health care workers apply standard precautions consistently with all patients, regardless of their diagnosis, in all work practices, all of the time. Droplet precautions should be added to the standard precautions when providing care to any patient with symptoms of acute respiratory infection [9].

## Case Report

**Detected confirmed case in Oman**

A 59 years old Omani male who became sick with fever, cough and shortness of breath on 20th December 2013 was admitted to hospital in North Batinha Governorate on 24th December 2014.

There is no history of weight loss or any chronic disease. He was a heavy smoker for more than 40 years. The patient had a history of daily exposure to camels and other farm animals with participation in camel race events. There was no history of similar illness within the family or visitors with the same complaint. There was no history of any animal sickness or death within their animals or in the area.

On 28th December 2014 the patient became very sick, febrile and distressed (BP = 136/70, Temp. = 39.6, Pulse = 109, SPO2: 92%, chest examination revealed crepitation and crackles. Chest X ray showed right upper lobe opacity (attached). He was admitted to an intensive care unit with diagnoses of pneumonia.

During his hospitalization, the patient was managed with supportive care. Hydration, empirical antibiotic and antiviral were started. Swabs were taken and culture was done for blood, urine and secretion; endotracheal secretion sample was taken on 29th December. Patient was ventilated with all measurements of supporting life. He was fully isolated in the ICU and full infectious control was emphasized from the admission. Patient died on 30th December.

**(Chest X-ray of the patient taken on 24th December 2013)**

The laboratory confirmation of MERS-CoV was made on 1st January 2014 by real-time reverse transcriptase polymerase chain reaction (RT-PCR).

## Discussion

The original source of infection and mode of transmission to humans is unclear. Cases were reported to have visited farms and may have had contact with animals, thus a zoonotic infection is a possibility [10]. People handling or working with camels are at increased risk of infection with MERS-CoV compared with people who do not have contact with camels. Some studies provide evidence that camels are a likely primary source of the MERS-CoV that is infecting humans. Studies showing that SARS-CoV was most likely to have derived from bats and camels also supports a zoonotic origin for this new coronavirus [11]. Our unfortunate patient was a farm worker and had close contact with animals, specially camels. Human to human and nosocomial transmission is another possibility as reported in the literature [12-13].

Clinical features are reported as rapidly progressing respiratory symptoms with fever. The largest, most complete clinical case series published included 47 patients; most had fever (98%), cough (83%), and shortness of breath (72%). Many also had gastrointestinal symptoms (26% had diarrhea, and 21% had vomiting). All but two patients (96%) had one or more chronic medical conditions, including diabetes (68%), hypertension (34%), heart disease (28%), and kidney disease (49%). Thirty-four (72%) had more than one chronic condition[14].

Ministry of Health Oman continues to recommend that patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) be evaluated and reported to local and state public health departments. If the illnesses remain unexplained, particularly if the cluster includes health-care providers, testing for MERS-CoV should be considered as mentioned in guidelines published by the health department.

Confirmation of diagnosis of MERS-CoV with real-time polymerase chain reaction (RT-PCR), is done by using the recommended sampling technique (nasopharyngeal swab and tracheal aspirates or bronchoalveolar lavage in intubated patients). In suspected cases with negative RT-PCR results, the test should be repeated. The literature supports the screening of patients and family members who were potentially exposed to MERS-CoV [15].

As a general precaution everyone should practice general hygiene measures, including regular hand washing after touching animals, avoiding touching eyes, nose or mouth with hands, and avoiding contact with sick animals. The consumption of raw or undercooked animal products, including milk and meat, carries a high risk of infection from a variety of organisms that might cause disease in humans.

## Conclusion

This emerging public health problem needs more investigation identifying the possible zoonotic hosts or environmental sources which may act as modes of transmission between camels and humans. So far only one confirmed case has been reported from Oman.

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# How to construct a successful grant proposal

**Mohsen Rezaeian**

**Correspondence:**
Professor Mohsen Rezaeian
PhD, Epidemiologist
Social Medicine Department
Occupational Environmental Research Center
Rafsanjan Medical School
Rafsanjan University of Medical Sciences
Rafsanjan-Iran
Tel:03915234003
Fax:03915225209
**Email:** moeygmr2@yahoo.co.uk

## Abstract

**Scientists should be able to write a successful grant proposal in order to obtain the necessary budget for their research. In this article some practical guidelines are provided which help researchers, especially young and novice researchers on how to construct a successful grant proposal.**

**Key words:** **Grant proposal, guidelines**

## Introduction

Scientists need to write a successful grant proposal in order to obtain the necessary budget for their research. However, since funding agencies are limited and they all apply strict rules, writing a successful grant proposal is becoming a painstaking task. In this article some practical guidelines are provided which help researchers, especially young and novice researchers on how to construct a successful grant proposal.

## Practical Guidelines

1. First and foremost you should have a novel research idea which is also achievable. It is obvious that you will never get to such an idea unless you become an expert in your field. Moreover, you will not become an expert in your field unless you read and comprehend all research papers relevant to your expertise.
2. Although a novel idea which is obtainable through scrupulous review of literature is the most vital prerequisite of constructing a successful grant proposal it is not sufficient. You should also know how to clearly and attractively articulate it.
3. Since articulating your idea partially depends on the instructions of your target funding agency it would necessary that you recognize all related funding agencies related to your field. This recognition also helps you to submit your grant proposal to the most relevant agencies so increasing the chance of its approval.
4. Based on the instruction of the target funding agency, select a relevant and at the same time, an attractive title. Then use the Introduction section of your proposal to highlight the background, importance and the necessity of researching your topic. Be concise and focused as much as you can. Towards the end of this section clearly state your aims.
5. The next section of your proposal contains the review of relevant literature. Since funding agencies might limit the number of literature that you should review, follow meticulously the instruction of your target funding agency. Based on the instruction select the best of your literature and critically review them.
6. The next section of the proposal contains your methods. I do believe that this section of your proposal performs as its heart. Your proposal would not survive with a flawed heart. Therefore, craft this section scrupulously. Give the details of your materials and methods and make sure that this section of your proposal is as comprehensive as possible.

7. Now it is time to ask for the proper budget for your proposal. Again you should write this section meticulously by considering all your needs in terms of personnel, equipments, materials, etc. Try to give your best real estimation.
8. You might end crafting your research proposal by inserting your timetable schedule. Clearly explain in order who does what and how long it will take. This not only helps your reviewers to get a sense of your action plan but also helps you to manage your plan successfully if your proposal is approved.
9. As soon as you finish constructing your research proposal prepare a brief but comprehensive and well-written abstract for it. Since grant reviewers begin their review by reading the abstract you should write it elegantly to impose a positive impact.
10. Before submitting your grant proposal to your target funding agency ask one of your experienced friends or colleagues to critically review it for you. Her/his comments would help you to make any necessary changes before submission.
11. All the above guidelines will help you to write a successful grant proposal. However, if your proposal is rejected by your target funding agency do not give up. Read carefully the reasons of your reviewers on why your proposal has been rejected. In the next step revise you proposal based on their comments and resubmit it to another relevant funding agency.

## Conclusion

Due to shortage of funding agencies writing a successful grant proposal is becoming a painstaking task for scientists. In this article eleven practical guidelines are provided which help researchers especially young and novice researchers on how to construct a successful grant proposal.

## Further reading

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