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# Knowledge, Attitudes, and Practices of Primary Health Care Physicians Regarding the Pre-Travel Counseling for Type 2 Diabetic Patients in Jeddah

**Dr.wedyan Saleh Almushaddak**

**Dr.randa jonaid Alsagheir**

## Abstract

The study's main goal was to evaluate the state of pre-travel counseling for type 2 diabetic patients among PHC physicians in Jeddah. According to the findings of the study, diabetic patients should pack prescriptions and carbohydrate-rich foods in easily accessible baggage, but not insulin, which should not be packed in checked luggage. Approximately 133 responders are aware of insulin injection recommendations, whereas 28 require changes for cross-country travel across five time zones. The majority of people are ignorant of the significance of pre-travel immunization for diabetic patients traveling east or west. Most respondents strongly believe that pre-travel counseling is critical for diabetic patients, and the availability of an Arabic resource would raise knowledge of health behaviors. Seeking medical advice minimizes the

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chance of disease when traveling. Saudi Arabia lacks travel medicine practices, and the general public is unaware of their significance. According to the survey, 98 respondents had fewer than 20 visits to their clinic, while 42 had 20-40 visits. Each month, approximately 161 patients did not seek pre-trip counseling, and 147 were aware of travel safety recommendations. The majority of patients inquired about vaccinations and medicines. The majority of responders were unaware how to adjust insulin doses for patients traveling across time zones. Our findings may inspire the development of travel medical training programs to address the highlighted gaps and provide enough information during pre-trip counseling. A leaflet with further information, as well as a website where patients can find health information related to their location, should also be provided.

**Keywords:** Knowledge; Attitudes; Practices; Primary Health Care Physicians; Pre-Travel Counseling; Type 2 Diabetic; Jeddah; KSA.

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## 1. Introduction

The number of international flight passengers has increased in recent decades, and the prevalence of travel-acquired illness is projected to rise in proportion to the predicted increase in international travel (Piotte et al., 2013). Travel has become an essential aspect of Saudi culture. Every year, millions of Saudis go outside the nation for pleasure or business. Traveling overseas, particularly to a developing country, poses a health risk, and international surveys show that more than half of passengers may experience a health problem during or after their trip. Travel places people in unfamiliar situations, which can be especially difficult for people with chronic conditions like diabetes (Lengyel and Felkai, 2018; Steffen, 1991). A number of studies have found that diabetes patients' choice of travel destination may be influenced by their insulin use, and some of these patients forgo international travel entirely due to their ailment (Burnett, 2006; Pinsker et al., 2017).

Diabetes mellitus (DM) was found in 25% of individuals in KSA (Abuyassin and Laher, 2017). According to a recent Saudi Arabian study, more than 44% of people aged 55 and up had severe uncontrolled diabetes with long-term complications (Alsenany and Al Saif, 2015). Many diabetic travelers are unaware of this health danger. As a result, pre-travel guidance from primary health care (PHC) physicians is critical in keeping travelers well during their travels.

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Travel health counseling is an important part of any pre-trip consultation. Unfortunately, despite the fact that most travel-related health problems can be avoided with high-quality medical consultations that include information on lifestyle and dietary regulations or the prescription of appropriate drugs, the uptake of pre-travel health counseling remains low (Lengyel and Felkai, 2018; Steffen, 1991; Gill and Redmond, 1993; Paudel et al., 2017).

### 1.1 Research Problem

There have been few published health studies that investigate physicians' knowledge and practices regarding travel and diabetes. To the best of the researcher's knowledge, there have been few studies on travel health habits in Saudi Arabia and the Middle East as a whole. As a result, our goal is to analyze the knowledge and attitudes of PHC physicians in Jeddah about pre-travel counseling for type 2 diabetes patients.

Recognizing the gaps in primary healthcare physicians' knowledge and practice regarding pre-travel consultation for type 2 diabetic patients is critical in developing applicable and accessible travel medicine education programs for PHC physicians in order to improve the quality of care provided to diabetic travelers.

### 1.2 Study Questions

The problem of the current study can be summarized in the following questions**:**

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1. What is the level of knowledge, attitude, and practice of PHC physicians in Jeddah City, KSA regarding pre-travel counseling for type 2 diabetic patients?
2. What are the factors associated with PHC physicians` knowledge, attitude, and practice of pre-travel counseling for type 2 diabetic patients in Jeddah?

### 1.3 Study Objectives

The main objective of the study is to assess the status of pre-travel counseling for type 2 diabetic patients among PHC physicians in Jeddah.

The problem of the current study can be summarized in the following sub-objectives:

1. To assess the level of knowledge, attitude, and practice of PHC physicians in Jeddah, regarding pre-travel counseling for type 2 diabetic patients.
2. To identify factors associated with PHC physicians` knowledge, attitude, and practice of pre-travel counseling for type 2 diabetic patients in Jeddah.

## 2. Literature Review

### 2.1 Travel Medicine

Travel medicine is a new field that has emerged as a result of the growing travel population. However, due to travel-related dangers and problems,

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practicing physicians have not prioritized this (Price et al., 2011). Travel medicine is a difficult practice; there are currently dynamic changes in global health hazards and increasing population mobility, emerging diseases, lifestyle disorders, and a variety of other host factors, all of which contribute to the complexity of travel medicine. Furthermore, passengers include vulnerable groups such as pregnant women, the elderly, and the very young (Price et al., 2011; Bruni and Steffen, 1997; Hill, 2000; REID, 2001). To further complicate the practice of travel medicine, new vaccines targeting passengers are being developed. Through an individual risk assessment, travel medicine clinics can advise on the required and recommended health precautions needed before traveling, as well as provide services for returning passengers (Kurup et al., 2019).

## 2.2 Primary Care Physicians (PCPs)

Primary care physicians (PCPs) are frequently the initial point of contact for travelers seeking pre- or post-trip assistance, and their position has grown in importance. Physicians who advise travelers must be aware of the evolving epidemiology of travel-related disorders as well as the availability of particular novel prevention and treatment approaches (Al-Hajri et al., 2011). Since 1987, several global surveys have evaluated the quality of travel medicine practice among primary care physicians (Al-Hajri et al., 2011; Kogelman et al., 2014; Van Herck et al., 2004). There are substantial variances in the quality of advice provided by PCPs, as

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well as their efforts to improve the quality of PCP practices in this field (Ropers et al., 2004). Furthermore, high levels of knowledge in travel medicine were largely associated with PCP's ambition to practice in this specific profession (Piotte et al., 2013).

## 2.3 Practice of Travel Medicine Advice Among Primary Healthcare Providers in Different Countries

Alduraibi et al. (2019) conducted a cross-sectional study in Riyadh to investigate 385 primary healthcare providers' knowledge, attitudes, and behaviors regarding pre-travel counseling for type 2 diabetic patients. The findings found that 57.9% of PHC physicians had inadequate knowledge. Younger, male, Saudi general practitioners with less than 5 years of experience were more likely to have inadequate knowledge of pre-travel counseling for type 2 diabetic patients. 47.5% of physicians expressed disagreement on the importance of pre-travel counseling for type 2 diabetic patients. This disagreeing attitude was more likely to be expressed by Oder and more experienced physicians. Almost two-thirds (62.6%) of the physicians had low practice scores, with younger, male Saudi physicians and general practitioners faring the worst.

In Hungary, Lengyel and Felkai (2018) conducted a cross-sectional survey of 100 international travelers to assess pre-travel counseling and patient education. Only 5% consulted their primary care physicians before flying, and 29% did so when they needed to be vaccinated, while 42% never consult their primary care physicians before traveling, despite

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the fact that 29% of them had some chronic ailment. Only 6% acquired their pre-travel health information from their doctors, whereas 51% got it from the Internet. Moreover, Pinsker et al., (2017) investigated the experiences of 503 type 1 diabetic individuals traveling great distances in the United States. Subcutaneous insulin infusion users with and without continuous glucose monitoring reported "losing supplies," whereas non-Subcutaneous insulin infusion users reported "unstable blood glucose (highs and lows)" (P 0.05). Most patients (74%) reported increased hypoglycemia and/or hyperglycemia while traveling abroad, and 9% avoided international travel due to diabetes management issues.

Burnett (2006) conducted a cross-sectional survey in the United Kingdom using a self-administered questionnaire among diabetic patients treated with insulin to characterize difficulties encountered while going overseas, to assess the pre-travel advice provided to them, and the impact of guidance. The findings revealed that around 10% of patients had problems when traveling, the majority of which were caused by hypoglycemia. The majority of patients required greater counsel to be available at the clinic. Long-distance travelers were more likely than shorter-distance travelers to seek guidance from clinic staff and were more inclined to use a clinic website to get travel information (70% vs. 54%).

Al-Hajri M et al. (2011) conducted a prospective study in Qatar to analyze primary health care (PHC) physicians' pre-travel counseling

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practice. The majority of responders (77.6%) attended a travel medicine symposium. Less than half of the subjects (44.7%) offered health advice to travelers. Female physicians were more likely than male physicians to provide travel medicine advice (59.2% vs. 40.8%), and Qatari physicians were more likely than non-Quatri (60.5% vs. 39.5%). Nearly 44.1% of doctors spent at least 15 minutes with each patient. For most topics, there was a significant improvement in knowledge in the post-symposium questionnaire compared to the pre-symposium questionnaire. The internet was the most common source of information (78.9%). Approximately half of the physicians offered pre-travel medical counseling.

Kogelman et al. (2014) conducted an online survey in the United States to compare the practice of travel medicine advice among primary healthcare physicians to that of travel medicine specialists. The majority of respondents (80%) offered pre-trip advice, including 73% of primary healthcare providers and 95% of travel medicine experts. Compared to 30% of travel medicine experts, over two-thirds (68%) of primary healthcare professionals providing pre-trip advice saw less than 50 travelers per year. Travel medicine specialists were more likely than general care physicians to see more than 500 travelers each year (59% vs. 18%). As the number of passengers expanded, so did the availability of travel-specific vaccines (yellow fever and Japanese encephalitis) and written instructional materials. Travel medicine professionals had a better level of familiarity with antimalarial drug side effects, patterns of malaria resistance trends, and knowledge scores.

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## 3. Methodology

### 3.1 Sample Size

The sample size was calculated using an online Roasoft sample size calculator, with the assumptions that the total population of physicians practicing at MOH primary care centers in Jeddah city is 280 physicians, and the prevalence of poor knowledge regarding pre-travel counseling was 57.9%, as observed in a recent Riyadh study (Alduraibi et al., 2020). With a 95% confidence level and 5% margins of error, the minimum required sample size was 161 physicians.

### 3.2 Sampling Technique

To select a sample representing all geographical areas of Jeddah, approximately 6 PHC centers near King Abdullah Medical Complex, 7 PHC centers near King Fahad Hospital, 6 PHC centers near Eastern Jeddah Hospital, 4 PHC centers near King Abdulaziz Hospital, and 3 PHC centers near Althaghar Hospital were chosen, and all PHC physicians working at these centers were invited to participate in the study.

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## 4. Results and Discussion

### 4.1 Descriptive Analysis (Demographic)

Table (1) Age Characteristics

| Age | <30 | >30 |
|---|---|---|
| | 31 | 130 |

Table (1) divided the sample into two groups based on age, respondents aged less than 30 were 31, and this group has the smallest number of participants. while the respondents aged more than 30 years made up 130 respondents of the overall sample size.

Table (2) Gender Characteristics

| Gender | Female | Male |
|---|---|---|
| | 99 | 62 |

The sample was separated into two groups based on gender Table (2). Females made up the largest proportion of responders, accounting for 99 respondents of the total sample size. Male respondents, on the other hand, made up 22 respondents of the entire sample size.

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Table (3) Specialty Characteristics

| Specialty | Family Medicine | General practice |
|---|---|---|
| | 58 | 103 |

The sample is separated into two groups based on their specialty. 58 respondents are family medicine, on the other hand, 103 of respondents are general practice.

Table (4) Nationality Characteristics

| Nationality | Saudi | Non-Saudi |
|---|---|---|
| | 161 | 0 |

Table (4) shows that all the samples are from Saudi Arabia.

Table (5) Education Degree Characteristics

| Education degree | Consultant | Registrar | Resident | General Practitioner |
|---|---|---|---|---|
| | 11 | 23 | 21 | 106 |

The sample is divided into four groups based on their education degree. 11 respondents are consultants, 23 respondents are registrars, 21 are residents, and 106 are general practitioners.

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Table (6) Years Since Completing Medical College Characteristics

| Years since completing medical college | 0-5 | 6-10 | 11-15 | >15 |
|---|---|---|---|---|
| | 80 | 43 | 28 | 10 |

Table (6) divided the sample into four groups based on the years since they completed medical college characteristics. respondents who complete medical college since (0-5) years made up 80 people of the overall sample size. Respondents who complete medical college since (6-10) years made up 43 people of the overall sample size. Respondents who complete medical college since (11-15) years made up 43 people of the overall sample size. Finally, respondents who complete medical college since more than 15 years made up 43 people of the overall sample size.

## 4.2 Knowledge Section

Table (7) Knowledge Statements Results

| **Question** | **Statements** | **Yes** | **No** | **I don't Know** |
|---|---|---|---|---|
| Q1 | Patients with diabetes should be advised to carry medicines and carbohydrate-rich snacks in easily accessible bags while traveling. | 161 | 0 | 0 |
| Q2 | Insulin can be stored in checked luggage. | 133 | 0 | 28 |
| Q3 | In air travel, patients with diabetes advised to not inject insulin at takeoff. | 70 | 20 | 71 |

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| | | | | |
|---|---|---|---|---|
| Q4 | Traveling across more than five time zones requires insulin dose and frequency adjustment. | 133 | 0 | 28 |
| Q5 | Traveling across more than five time zones requires oral anti-hypoglycemic dose adjustment. | 0 | 140 | 21 |
| Q6 | Patients with diabetes who traveling to West region may need to decrease the insulin dose. | 0 | 131 | 30 |
| Q7 | Extremes of hot or cold climate can affect how insulin and blood glucose monitor in patients with diabetes while traveling. | 35 | 26 | 100 |
| Q8 | Is pre-travel vaccination important for patients with diabetes? | 161 | 0 | 0 |

All responders were aware that patients with diabetes should be advised to travel with medicines and carbohydrate-rich foods in easily accessible bags. 133 respondents, on the other hand, were aware that insulin should not be stored in checked luggage. 70 respondents are aware that individuals with diabetes are recommended not to inject insulin before departure when flying, while 71 are unaware. 28 respondents were unaware that traveling across more than five time zones necessitates an adjustment in insulin dose and frequency, whereas 133 respondents were aware that traveling across more than five time zones necessitates no adjustment in oral ant hyperglycemic dose. All of the respondents are unaware that diabetic patients going to the east may need to raise their insulin dose, whilst those traveling to the west may need to lower their insulin dose. All respondents are aware of the importance of a pre-travel vaccine for diabetic patients.

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### 4.3 Attitude Section

Table (8) Attitude Statements Results

| Q | Statements | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|---|
| Q1 | Pre-travel counseling for patients with diabetes is important. | 0 | 0 | 0 | 0 | 161 |
| Q2 | The availability of an Arabic resource to increase the perception of health practice before, during and after the trip is needed. | 0 | 0 | 0 | 20 | 141 |
| Q3 | If there is trusted Arabic resource to increase the perception of health practice before, during and after the trip I will advise my patient to visit it? | 0 | 0 | 0 | 28 | 133 |
| Q4 | Seeking medical advice before travel will decrease | 3 | 6 | 13 | 17 | 122 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | the chances of getting sick during the trip. | | | | | |
| Q5 | In Saudi Arabia we lack travel medicine practice. | 2 | 1 | 0 | 9 | 149 |
| Q6 | Our society lacks the knowledge of travel medicine importance. | 1 | 7 | 0 | 111 | 42 |

Table (8) depicts the attitudes of participants regarding pre-travel counseling. The majority of them strongly agreed with the following statements: pre-travel counseling for diabetic patients is important, and if an Arabic resource to increase patients' awareness of health practices before, during, and after the trip is available, they would recommend that patients visit such a resource. Furthermore, the majority (122 respondents) strongly agreed that seeking medical advice before going will reduce patients' chances of being ill while traveling. In addition, 149 respondents strongly agreed that Saudi Arabia lacks travel medicine practices, and 42 strongly agreed that our community is unaware of the importance of travel medicine.

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## 4.4 Practice Section

Table (9) Practice Statements Results

| | |
|---|---|
| What is the estimated number of patients with diabetes that visit your clinic per week for any reason? | |
| <20 | 98 |
| 20-40 | 42 |
| >40 | 20 |
| What is the number of patients with diabetes that ask for advice before his/her trip per month? | |
| 0 | 161 |
| 10-10- | 0 |
| 11--19 | 0 |
| >20 | 0 |
| If you counseled a patient with diabetes before traveling, how long did it take | |
| < 5 min | 0 |
| 5-15 min | 0 |
| >15min | 0 |
| I did not council | 161 |
| Do you advice and counsel your patient with diabetes regarding the importance of the recommended vaccines before travel? | |
| yes | 161 |
| no | 0 |

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| Do you face patients with diabetes who are trying to avoid travel because of their illness? | |
|---|---|
| yes | 54 |
| no | 107 |
| Are you aware of travel safety recommendations for patients with diabetes? | |
| yes | 147 |
| no | 14 |
| Do you feel confident about how to adjust insulin dose for patients who travel across several time zones? | |
| yes | 147 |
| no | 14 |
| Patient mostly ask you about (you can choose more than one answer) | |
| I never been counseled | 102 |
| Medication adiustment | 93 |
| Vaccination | 161 |
| Prescription | 161 |
| Daibets ID and a letter | 4 |

The estimated number of patients with diabetes that visit the clinic is shown in Table (9). Respondents who have less than 20 from their patient's visits to their clinic amounted to 98. Respondents who have (20-40) from their patient's visits to their clinic amounted to 42. Respondents

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who have more than 40 from their patient's visits to their clinic amounted to 20. Approximately 161 patients every month do not seek counsel before traveling. All the participants reported that they don't know how much pre-travel time counseling would take. Additionally, all of the respondents reported that they would advise and counsel patients with diabetes regarding the importance of recommended vaccines before they traveled. 147 respondents were aware of travel safety recommendations for diabetic patients. Approximately 147 people said they were unsure how to alter insulin doses for patients traveling across many time zones. A total of 161 participants stated that patients mostly asked about vaccination and prescription.

Piotte et al., (2013) investigated the level of specialized knowledge on health advice, vaccinations, and malaria prophylaxis among primary care physicians in eastern France. They came to the conclusion that the participants' high degree of expertise in travel medicine was primarily due to their desire to practice in this particular field. This finding should be taken into account when it comes to the provision of educational programs in our society.

Another study by Al-Hajri et al., (2011) surveyed 76 PHC physicians in Qatar. The questionnaire included items assessing socio-demographic characteristics and knowledge and practices related to travel medicine before and after an educational symposium (Al-Hajri et al., 2011). They detected significantly increased knowledge on the post-symposium

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questionnaire for most questions. This reflects the fact that the availability of extensive educational programs for healthcare providers will increase their awareness and knowledge.

Kogelman et al., (2014) found similar results when comparing the knowledge, attitudes, and practices of US primary care doctors and US travel medicine experts. They discovered knowledge and practice gaps among practitioners who provide travel medical guidance. Furthermore, they discovered that travel medicine professionals had a greater level of familiarity with travel-specific vaccines and knowledge ratings based on brief pre-trip scenarios.

To lower the incidence of travel-related morbidity, comprehensive pre-travel health advice is required. Other studies have demonstrated that primary care physicians are involved in travel medicine (Schunk et al., 2001). In our study, more than half (84.2%) of the PHCP counseled diabetic patients about the necessity of vaccinations before travel. This reflects the fact that vaccination schedules are more widely available.

In contrast, a study conducted in Qatar found that more than half of the hotels did not provide travel health counseling to visitors (Al-Hajri et al., 2011).

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## 5. Conclusion and Recommendations

The study's main goal is to evaluate the state of pre-travel counseling for type 2 diabetic patients among PHC physicians in Jeddah. The sample size was calculated using an online Roasoft sample size calculator, assuming that the total population of physicians practicing at MOH primary care centers in Jeddah city is 280 physicians and that the prevalence of poor knowledge regarding pre-travel counseling was 57.9%, as observed in a recent Riyadh study (Alduraibi et al., 2020). The minimum necessary sample size was 161 physicians with a 95% confidence level and 5% margins of error.

The study find that diabetic patients should pack medications and carbohydrate-rich foods in easily accessible bags, while insulin should not be packed in checked luggage. Approximately 133 respondents are aware of insulin injection recommendations, while 28 require modifications for travel across five time zones. Most are unaware of the importance of pre-travel immunization for diabetic patients traveling east or west.

Most respondents strongly agree that pre-travel counseling is crucial for diabetic patients, and if an Arabic resource is available, it would increase awareness of health practices. Seeking medical advice reduces illness risks during travel. Saudi Arabia lacks travel medicine practices, and the community is unaware of its importance.

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The study found that 98 respondents had less than 20 visits to their clinic, while 42 had 20-40 visits. About 161 patients per month did not seek pre-travel counseling, and 147 were aware of travel safety recommendations. Most patients asked about vaccination and prescriptions. Most respondents were unsure about how to alter insulin doses for patients traveling across time zones.

The researcher's conclusions led to the following recommendations:

1. Our findings may encourage the creation of travel medical training programs to address the inadequacies identified and offer adequate information during pre-trip counseling.
2. A brochure with extra guidance, as well as a website where patients can discover health information specific to their destination, should be offered.

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