

Pharmacies in the Airport Ecosystem and How They Serve Travelers' Health and Medicines Need: Findings and Implications for the Future


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Introduction: Pharmacists at airport pharmacies could offer essential health services for air travelers. Consequently, this study aimed to explore the type of professional services, the types of medicines at airport pharmacies and the pharmacists' experiences and views regarding their practices.

Methods: A qualitative study was conducted with pharmacists practicing in airport pharmacies from June 2020 to December 2020. A validated Google form-based interview questionnaire was developed, and the electronic link was sent to the participants. Recruitment of participants was continued until data saturation was achieved. In total, 15 pharmacists working at different airport pharmacies in different countries were included. Thematic analysis was used in the data analysis.

Results: The study identified six major themes including type of professional services and medicines at airport pharmacies, pharmacists' experiences, challenges at the airport pharmacy, suggestions to improve airport pharmacy services, pandemics and the role of pharmacists, and business aspect of the airport pharmacies. The study showed that several professional services provided at airport pharmacies, including the provision of medicines, health products, general health services, travel health services, and counseling. Moreover, 46.7% of the participants reported having a dedicated travel health service. In addition, most of the participants described their experience at airport pharmacies as good and exciting as they met different people from different countries. The most common challenges that pharmacists face at airport pharmacies include language barriers, requests for different medicine brands by travelers, and financial issues. The participants indicated that there is a need for promotion of pharmacists' role in providing health care services at airport pharmacies.

Conclusion: The study showed that pharmacists could play vital roles in providing medicines and health care services for air travelers. However, there is still further scope for improvement in this sector of the pharmacy profession to ensure a more active role in travel medicine.

Keywords: airport pharmacy, air travel, aviation pharmacy, pharmacy services, travel health, supplements

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Introduction

Air travel is one of the most convenient and popular means of both domestic and international travel. Each year, people travel to different destinations by short- and long-haul flights for various purposes, such as leisure, business, visiting friends and family, medical, and various religious observances. In 2019, a record number of approximately

4.6 billion people traveled by air to different destinations.¹ Air travel is an essential element of economic development. It connects people and businesses and impacts their productivity and economic output, thereby contributing to a country's economic growth as a whole.² At the very core of air travel are airports that manage incoming and outgoing flights, and transport passengers, staff and visitors to these airports. Modern international/domestic airports are complex, multipurpose hubs that provide passengers with facilities, such as departure gate lounges, airline lounges, restaurants, shopping, entertainment venues, meeting rooms, leisure and other activities after travel and during transit.³ Along with these services, modern airports, especially in the Organization for Economic Cooperation and Development (OECD) countries, may have pharmacies and medical or health clinics.⁴ They may even have small hospitals. Air travelers can use these facilities for minor to major illnesses and injuries and in the case of medical emergencies.

The health of air travelers is an essential element of overall travel, especially for travelers who are elderly and have chronic diseases, also for infants, children, pregnant women and those with disabilities.⁵ Furthermore, pharmacists working at airport pharmacies can help air travelers, especially during pandemics, such as the current COVID-19 pandemic, by providing health advice and necessary health supplies, such as personal protective equipment (PPE), appropriate health and prevention protocols, medical updates; they help travelers stay safe during air travel. Airport pharmacies were helping air travelers in various ways during the COVID-19 outbreak. For example, the airport pharmacy at Kuala Lumpur International Airport (Malaysia) supplied face masks, gloves and other PPE, the airport pharmacy at Toronto Pearson International Airport (Canada) provided a 48-hour COVID-19 test results service, and pharmacists at Gold Coast Airport pharmacy (Australia) provided medical updates and health and safety advice to travelers who approached them.⁶⁻⁸

In addition to other basic facilities in airports, medical or health clinics and pharmacies are essential for regular travelers during long-haul flight stopovers and during epidemics and medical emergencies.^{4,9} Furthermore, airport pharmacies can be a source of medicines, essential health supplies, and basic services for people involved in the aviation industry. Airport pharmacies can serve aircrew, staff working in airport services and various business outlets, security personnel, and government officials, such as migration and customs agents, and possibly air traffic control and airport maintenance staff. The

International Civil Aviation Organization's medical guidelines outline the necessary provisions for airport medical services and their usage to meet medical and health-related needs.¹⁰ However, there is a dearth of literature on pharmacy services available at major international/domestic airports. Based on our extensive literature search using keywords such as airport pharmacies, airport chemists, and airport pharmacists in several search engines, including PubMed and Google Scholar, no relevant studies on airport pharmacies in the last 20 years (ie, since 2000) could be found. This indicated very limited academic publications on this topic. Therefore, this study aims to explore the type of professional services, medicines, and practices at airport pharmacies and to explore pharmacists' experiences and views regarding practices at airport pharmacies.

Methods

Study Design and Research Strategy

A qualitative study was conducted with pharmacists working in airport pharmacies as "the key informants." The qualitative design was adopted in this study because it is considered a suitable research strategy when exploring new areas or when little is known about the topic or practice issues.¹¹ The qualitative study helps to describe the phenomenon or practice in its natural setting and helps to acquire an in-depth understanding of the participants' experiences, perspectives, views, and perceptions.¹² As one of the most common qualitative methods in practice, we adopted a qualitative descriptive (QD) study as the research strategy for this study^{13,14} because it provides a real-world detailed description of the experience of the participants and the issues in the practice settings.^{14,15} It is also less theorized than other qualitative methods. Consequently, it can effectively answer the research questions relevant to practitioners and policy makers in health care.^{13,14}

Study Instrument/Interview Guide

Initially, given the limited information in the literature about airport pharmacies, we visited the web portals of 100 of the world's busiest airports to explore the current state of airport pharmacies, their operations, and their provided services. After this initial research and based on the websites' initial screening and document review, a semi structured interview questionnaire was developed. The semi structured interview questionnaire included

several in-depth questions to explore several areas of interest with the pharmacists working at the airport. The semi structured interview questions were reviewed by three experts and discussed with two pharmacists working at airport pharmacies to ensure clarity and suitability to address the area of interest and gather in-depth information. The semi structured interview questions were in the English language and consisted of close-ended questions to collect specific information and open-ended questions to gather all other information and explore the topic in depth. The questions were primarily open-ended questions to ensure an in-depth exploration of the topics relevant to the study and focused on several specific topics. The topics included the type of medicines and products, type of services provided at the airport pharmacies, travel health services, pharmacists' experiences, and challenges at airport pharmacies.

Participants' Selection, Recruitment, and Data Collection

This study was carried out from June 2020 to December 2020. The study's target population (ie, pharmacists working in airport pharmacies) is considered a hard-to-reach population given the wide geographical distribution in one country and across countries. Therefore, as some of the authors of this article are registered pharmacists in different countries, we made several communications with registered pharmacists practicing in different countries via personal network. Consequently, we were able to find contact information of some pharmacists working in airport pharmacies. After that, pharmacists working at airport pharmacies and able to communicate in the English language via written or verbal media were included in the study. In contrast, those who were not comfortable communicating in English via written or oral media were excluded from the study. The pharmacists were then contacted via email, SMS, or WhatsApp and were invited to participate in the study. The participants were asked for their preference for a Zoom meeting or an email-based interview. All the participants preferred an email-based interview. Therefore, based on the participants' preferences and as the qualitative data can be successfully gathered from this type of open-ended written question,^{16,17} a Google form-based interview questionnaire was developed. An electronic link was sent to the participants. The recruitment of participants was continued until data saturation was

achieved, in which no more new information emerged and all responses became repetitive, indicating data adequacy.¹⁸ Therefore, data collection was stopped after interviewing 15 pharmacists working at different airport pharmacies. All interview responses were captured in Google form and downloaded to a password protected computer after completing all the interviews.

Data Processing and Analysis

The participants' responses yielded rich data and detailed information based on the questionnaire's open questions. Thematic analysis was used to analyze the texts and the participants' qualitative data.¹⁹ Two researchers (BKC and AAA) read the text and responses many times and took notes. Then, they highlighted and coded the interview texts. Next, they reviewed the codes to identify the pattern that emerged to form the themes. The themes were then reviewed by two other researchers (PAL and NM) to see whether they are relevant, unique, and accurately represent the text. All four researchers reviewed the themes and agreed upon the final themes. The data coding and generation of themes were based on the research questions and topics of interest (deductive analysis) and on the emerging and new information provided by the participants (inductive analysis).^{19,20} The qualitative analysis was peer-reviewed to ensure rigor and trustworthiness and the results were triangulated with our preliminary findings from reviewing the websites of pharmacies operating at 100 of the busiest international airports.

Ethical Approval

The study was approved by the Monash University Human Research Ethics Committee (Project ID: 24848) on 5th June 2020. Written informed consent was obtained from the participants in the study and the consent included publication of anonymized responses. The study was conducted according to the World Medical Association Declaration of Helsinki.

Results

Characteristics of the Participants and the Airport Pharmacies

We did a review of website and other documents of 100 busiest airport pharmacies first and extract information about their operation, functioning and services. Then, we did a qualitative study that included pharmacists practicing

in airport pharmacies from several countries including Malaysia, the United States, the United Kingdom, Canada, and Germany. Most participants (n=9; 60%) held a bachelor's degree in pharmacy, while the remaining participants (n=5; 40%) held a master's or doctor of pharmacy degree. The types of pharmacies included both retail and chain pharmacies. Most pharmacies (93.3%) were open for either 8–12 or 12–18 hours a day. In this study, 9 (60%) participants had formal training specific to airport pharmacy practice. The details are summarized in Table 1.

Themes

Type of Professional Services, Medicines and Practices at Airport Pharmacies

In this study, we explored the professional services provided by pharmacists practicing at airport pharmacies. The study showed several services provided at airport pharmacies, including provision of medicines, health products, general health services, travel health services, counseling of patients, and supply of other products and items needed by the travelers. These are summarized in Table 2.

Type of Medicines and Products Available at Airport-Based Pharmacies

In this study, all participants reported that they routinely stocked over-the-counter (OTC) medicines, health products, nutritional supplements, beauty products, and travel-related items in their airport pharmacies. However, less than half of participants reported offering prescription medicines in their pharmacies. We further explored the standard OTC and preventive medicines available in airport pharmacies. All the participants reported having anti-diarrheal medicines, antacid medicines, antihistamines, motion sickness medicine, cough suppressants, expectorants, decongestants, pain and fever, laxatives, mild sedatives or sleep aids in their airport pharmacies. In addition, the common health supplies available in airport pharmacies included a first aid kit, hand sanitizer (alcohol-based) or antibacterial hand wipes, insect repellent sunscreen, sunglasses and hat, condoms, earplugs, and other travel-related items.

Type of Services Provided at Airport-Based Pharmacies

The participants reported a wide range of professional services provided at their pharmacies. The common professional and health-related services included dispensing and supplying medicines (OTCs and prescription medicines), providing point-of-care services (eg, blood pressure

Table 1 Characteristic Data of the Participants and the Airport Pharmacies (n=15)

Variable		Number (%)
Type of Pharmacy	Retail Pharmacy	10 (66.7%)
	Chain Pharmacy	5 (33.3%)
Opening hours	8–12	7 (46.7%)
	>12–18	7 (46.7%)
	>18–24	1 (6.7%)
Country of the pharmacies	Malaysia	5 (33.3%)
	United States	3 (20%)
	United Kingdom	2 (13.3%)
	Canada	1 (6.7%)
	Germany	1 (6.7%)
	Did not disclose	3 (20%)
Qualification of pharmacists	Bachelor' degree	9 (60%)
	Master's degree	4 (26.7%)
	Doctor of Pharmacy	2 (13.3%)
Pharmacist having formal training specific for practice in airport pharmacy	Yes	9 (60%)
	No	6 (40%)
Is the airport pharmacy linked with any health facility (hospital or clinics)?	Yes	2 (13.3%)
	No	13 (86.7%)

and blood glucose measurements and temperature checks), providing health advice and counseling, supplying health- and travel-related products, and providing travel health services.

Type of Travel Health Services Provided at the Airport Pharmacies

In this study, less than half of the pharmacies (46.7%) reported having a dedicated travel health service. The service included dispensing preventive medicines such as antimalarial drugs, high-altitude sickness medicines, vaccinations (eg, flu shots), advice on travel-related diseases

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Table 2 Medicines, Health, and Travel Medicine Services Provided by Pharmacies at the Airport (n=15)

Variable		Number (%)
Type of products	OTC and prescription medicines	7 (46.7%)
	OTC and pharmacist only medicines	8 (53.3%)
	Health products, nutritional supplements, beauty products, and travel-related items	15 (100%)
Travel health services	Yes	7 (46.7%)
	No	8 (53.3%)
General Health services and counseling	Yes	14 (93.3%)
	No	1 (6.7%)

(eg, infectious diseases), packaging and labeling regular medicines for travel purposes, health counseling, tailored advice based on travelers' itineraries, and health supplies for travel purposes. The following are quotes from the participants.

Yes, we advise people on health and hygiene, provide some preventive medicines such as antimalarials, acetazolamide, some basic antibiotics, first aid box, and hygiene products, automatic refills, free delivery, on-site injections, and flu shots. Pharmacist-5

Yes, we advise travelers as per their itinerary, we also provide much-needed health advice and medicine supplies for chronic diseases and for other patients needing special care; we provide travel health supplies and even vaccination and other essential services as well. Pharmacist-10

Yes, we provide some vaccination like flu shots, travel medicine stuff such as antimalarials, altitude sickness medicines and other medicines needed for self-medication during travel, advice based on the itinerary of the person... but that one is more about giving the medicines and health supplies as per the destination of travelers. Pharmacist-11

Pharmacists' Experience at the Airport Pharmacy

In this study, we asked the participants to describe their experience as pharmacists in the airport pharmacy and express their views from their daily practice in this setting. Most of the participants described their experience as pharmacists working at airport pharmacies as a good,

interesting, and great experience and highlighted that they met different types of people from different countries. The following are some representative quotes from the participants to describe their practice and experience.

It is an interesting job as I get to meet different types of people. Pharmacist-2

It is an interesting job, and I got to see many people from different countries and help them; it is a dynamic environment and exciting to work at the airport. Pharmacist-5

It is a dynamic and challenging job... I get to meet different people each day, and I am happy that I can help air travelers with medicines, advice and health supplies; however, I feel that the recognition or importance of airport-based pharmacies has to be spread to people. Air travelers need to know, we are here to help them, and we can help them in many ways. Pharmacist-6

It is a good profession, I get to meet many new people every day. Pharmacist-12

Great experience because of the different needs from travelers of different countries. Pharmacist-15

Challenges at the Airport Pharmacy

In this study, we asked the participants an open-ended question. We provided them as key informants with freedom to report the common challenges that they encounter in their practice at airport pharmacies. The most common challenges that pharmacists face at airport pharmacies included language barriers, as all participants cited this as a challenge they face with international travelers. In addition, requests for different brands of medicines in travelers' own countries were a common issue encountered in airport pharmacies. Other challenges included financial issues such as the use of foreign currency and credit cards. The following are some quotes from the responses of the participants.

Language, not having local currency and not being able to provide the brand of medicine requested by the consumer... there might be many, but these are the things that I can say based on my experience with air travelers at our airport pharmacy. Pharmacist-7

Language and brands of medicines, not being able to supply or know about foreign brands. Pharmacist-8

I think language... not aware of the brand available in the local market or even let us say the airport pharmacy of that country and some of them do not have local currency and do not want to use the cards... Pharmacist-9

Based on my interaction, language, medicines name, and the currency are the three things that I remember.
Pharmacist-11

Suggestions to Improve Airport Pharmacy Services

The participants provided several suggestions and recommendations to improve travel medicine and pharmacy practice at airport pharmacies. Some participants suggested to increase public awareness of the current services provided by pharmacies at the airports. More promotion and awareness of the role of pharmacists in providing health care services, including travel medicine, is needed.

We are doing pretty much like providing prescription medicines, basic travel health services, and some regular pharmacy services.... I think we need to make people aware that comprehensive pharmacy services are available for people to help in the airport... Pharmacist-6

We need to be more visible in the sense that people, ie, air travelers know that there are airport-based pharmacies which can help them... Pharmacist-9

Maybe we have to provide more health services targeted to international travelers, and travelers who have long waiting hours in the airport usually face problems such as headache, sore throat, nose congestion, ear pain, fatigue, etc. and come to us for medicines or suggestions we have to be more visible to them. Pharmacist-14

Some participants suggested that the way forward is to explore the everyday health needs of travelers; then, we can expand our current services to cater to these needs of our clients.

We need first to study the common health care needs of air travelers and start providing those services via airport pharmacies such as ours. Pharmacist-7.

We need to research the needs of air travelers and see what type of service they need and try to provide such services however, we also need to see whether such service will be able to generate money for us or not... pharmacist-8

We need to know what travelers' health care needs are and how they are affected during travel... then we can provide them health services, medicines and other things that will help them during travel... Pharmacist-10

Pandemics and the Role of Pharmacists at Airports

Most of the pharmacists working in an airport pharmacy suggested several roles pharmacists can play during pandemics. They stated that pharmacists could supply

medicines; help airport authorities with basic health screening, such as checking temperature and blood pressure; supply health products, such as masks, sanitizers, face shields, and disinfectants; and provide health advice. Nevertheless, none of the pharmacists with whom we communicated were aware of the airport's emergency preparedness plan except for basic fire drills and other emergency protocols.

During pandemic outbreaks, we can do health screening, and provide health supplies such as mask, sanitizers, etc... as in the current COVID-19 pandemic. Pharmacist-5

They can help travelers..... they can help screening the patient like taking temperature, blood pressure, etc., can supply some essential health products and medicines. Pharmacist-10

Maybe providing people with required health supplies such as masks, disinfectants, gloves, face shields, etc. Pharmacist-14

To provide counseling for the prevention and symptoms of early detection for illnesses and diseases. Pharmacist-15

Business Aspect of the Pharmacies at the Airport

As this type of pharmacy is different in terms of its setting (ie, airport-based), characteristics of its clients (ie, travelers from different places or countries), and services (ie, travel related), we explored the nature of business in airport pharmacies. Most of the participants mentioned that their pharmacies were running well and were able to survive and generate good income. They sell both medicines and other products. However, many stated that, unlike other pharmacy sectors, for profitability, they rely more on health and beauty products rather than medicines and rely on items such as travel health kits and other items for the urgent needs of travelers such as travelers' medications and other basic needs such as earplugs, neck pillows, chargers, eye masks, pain-related management therapy, souvenirs, baby foods and water.

Business is good, we sell both medicines and health & wellness products. However, unlike other pharmacy sectors, our main business comes from travel health kits and wellness products. Pharmacist-6

It is good..... we sell medicines, health products, beauty products and gifts" Pharmacist-10

Business part is good... but again a large part of our business is from health supplies and beauty and cosmetics and health products...

Different needs compared to other nonairport pharmacies. Airport pharmacies mainly meet the emergency needs of travelers, such as basic traveler medications and basic traveler needs, such as earplugs, neck pillows, chargers, condoms, eye masks, pain-related management therapy, souvenirs, baby foods, and water. Pharmacist-15

Discussion

This qualitative study showed that airport pharmacies provided several professional services and supplied medicines and health services to air travelers, airport staff and workers, and crew. The professional services delivered by airport pharmacies included four main areas: medicine dispensing and basic pharmacy services, travel health services, essential health supplies, and beauty and wellness products. Moreover, in this study, the pharmacists described their work and experience at airport pharmacies as good, exciting, and extraordinary as they met different people from different countries. The key challenges reported by pharmacists included language, currency and brands of medicines. Furthermore, the participants indicated that awareness about airport pharmacy services need to be promoted to the travelers.

Medicine Dispensing and Basic Pharmacy Services via Airport Pharmacies

All the pharmacists in this study reported that their airport pharmacies were providing OTC medicines. Moreover, several pharmacies provided prescription medicines as well as medicines for travel purposes. This is consistent with our initial findings from reviewing the websites of pharmacies operating at 100 of the busiest international airports, which showed that airport-based pharmacies provide OTC medicines and prescription medicines. Furthermore, pharmacists said that apart from dispensing medicines, they provided patient counseling, blood pressure reading, blood glucose monitoring, temperature checking, smoking cessation, and health advice. Air travelers include people of various age groups and health statuses who have varied health care and medicine needs.²¹ Having pharmacies at the airport is very helpful for travelers, as they can obtain basic pharmacy services such as advice regarding filling medication prescriptions, labeling of medicines for travel purposes and accessing medicines, especially when they are in a hurry or when they get sick or have minor health problems at the airport (before, during or after the flight or while in transit).¹⁰

Several pharmacists in our study said that they dispense prescription medicines. This service helps all kinds of travelers, especially travelers with chronic illness, children, and the elderly.²¹ Studies carried out at health facilities based in airports have reported both minor and significant medical problems, including medical emergencies among travelers at the airport. Airport pharmacies dispensing both prescription and nonprescription medicines can aid travelers with minor medical problems and provide medicines to medical centers or airport clinics.^{22,23} However, one of the challenges for airport pharmacies is that patients or travelers request the brands of medicine that they are familiar with in their countries (ie, differences in medicine brands). Further, there are some significant differences in the scope of practice in travel health and medicine regulations; ie, some medicines (eg, some medicines for endemic diseases) are classified as prescription-only medicines in certain countries, while they are considered OTCs in other countries. For example, in South Africa, with few exceptions such as antimalarial drugs, pharmacists are not allowed to administer travel related vaccines and dispense travel related medicines without medical prescriptions.²⁴ In contrast, in Canada, pharmacists are authorized to administer vaccines and in some regions are authorized to provide prescription medicines including travel health related medicines.²⁵ In addition, there is sometimes significant difference within the same country in terms of scope of practice in travel health. For example, in the United States, in the state of New Mexico, pharmacists are authorized to administer vaccines and furnish prescription medicines independently without collaborative practice agreements (CPA) with physicians.²⁶ In California, pharmacists can independently provide travel-related prescription medicines that do not require a diagnosis such as chemoprophylaxis and self-treatment of travel-related conditions, but for administering travel vaccines, CPA is required in this state. In Hawaii, pharmacists require a CPA to provide travel-related prescription medicines.²⁶ Likewise, the regulations for carrying medicines by airline passengers in different countries are different and so are the rules for dispensing of medicines at the airport pharmacies.²⁷ Future studies are needed to examine in more details the scope of practice in travel health and regulations for medicine dispensing and provide comparisons between countries.

Travel Health Services via Airport Pharmacies

The travel health services reported by pharmacists included providing medications for travel purposes, health advice,

vaccination, and essential health products. Many people continue to travel to various destinations without appropriate pretravel health advice and preparation.²⁸ Airport pharmacies may be the last resort for these people to buy necessary medicines and health or well-being products before traveling to their destination. A study by Yates et al reported that travelers needing vaccinations at the last minute could benefit from the accelerated vaccine schedules.²⁹ Consequently, pharmacies at airports could have the potential role to help in this regard. Airport pharmacies could offer routine vaccinations such as Influenza (flu) vaccine and the COVID-19 vaccines such as the booster doses. Various studies have reported encouraging findings about administration of vaccinations by pharmacists and its uptake by the travelers/patients.^{30,31} Moreover, pharmacists in several countries such as Switzerland, Canada, the UK and Denmark are allowed to administer vaccines within their scope of practice including some vaccines for travel purpose.³² However, it should be noted that providing these travel vaccines via airport-based pharmacy requires a clear protocol on the training, facility requirements, arrangement in case of any emergency situation such as anaphylaxis due to vaccines, as well as a list of vaccines that can be delivered via airport-based pharmacies. For example, travel vaccination requiring multiple doses will not be feasible to be provided via airport-based pharmacies. In addition, many travel specific vaccinations would be hampered by the short time interval from administration to travel based exposure risk. Travel health services, travel-related health products, advice and counseling, are areas in which the existing airport pharmacies can further expand their services. In addition, these can generate additional revenue for airport pharmacies while serving the health needs of travelers. A study by Kodkani et al with Swiss pharmacists showed that pharmacists have satisfactory knowledge of travel medicine and emphasized the need to collaborate with doctors to achieve uniformity in travel health advice given.³³ More emphasis on travel medicine and professional training of airport pharmacists in this area of practice could be beneficial and needs to be further expanded.

Travelers Visit Airport Pharmacy

We found that airport pharmacies sell essential travel health supplies such as thermometers, travel pillows, hot water bags, ice packs, sunscreen, beauty products, and some grocery and gift items. According to participants, this helped generate good income, and the sale of these items provided much-needed revenue to airport pharmacies to meet the high rental and logistics costs. In addition, this can serve travelers

well by providing a convenient location to buy their medicines and other products they need while traveling.

Pharmacists' Experiences Working with Airport Pharmacies

The pharmacists described language barriers, international currency, and different medicine brands as the most common challenges of managing airport pharmacies. However, they found their work as a pharmacist at the airport pharmacy to be exciting, dynamic, and challenging. Most of the pharmacists shared a similar thought about working at airport pharmacies. This thought is consistent with what has been previously mentioned. For instance, some pharmacists of an airport pharmacy in the UK reported meeting new people every day and dealing with various medical scenarios ranging from emergency supply of medicines to travel sickness and malaria tablets.³⁴ In addition, similar to previous reports, pharmacists reported the differences in the needs of patients/travelers, odd working hours, the pharmacy environment and the need to deliver medicines promptly as some distinct features of working as a pharmacist in an airport.²⁷ D'Souza finds running travel clinics to be the most exciting aspect of the work in travel clinic and reports providing travel health services such as malaria prevention services and vaccination for yellow fever, cholera, meningitis, rabies, tetanus, and polio.²⁷ Working as a pharmacist at an airport pharmacy can be both exciting and challenging. As airport pharmacies' nature and operation are distinct from those of community pharmacies, pharmacists need appropriate training, work environments, and facilities to deliver pharmacy services and medicines for travelers and airport staff.

Pandemics and the Role of Airport Pharmacies

Most of the pharmacists were not aware of an airport emergency preparedness plan. However, a pharmacist working at the airport suggested that they could play some crucial role during pandemics. Pharmacists said they could help with the supply of pharmaceuticals and medicines, screening of patients, etc. The medical component of disaster planning is mainly carried out and managed by airport medical services. Airport emergency medical services have protocols with specific roles and resources for medical emergencies.⁹ However, there seems to be a lack of clarity regarding the pharmacist's role at airport pharmacies during disasters and

emergency response situations. A study in 2014 by Gosadi et al among workers at an airport in Saudi Arabia showed that airport workers, including health and nonhealth workers, lacked adequate knowledge regarding public health emergencies and highlighted the need to develop public guidelines on health emergencies and communicate them to airport workers.³⁵ Similar studies have not been carried out among pharmacists working at airport pharmacies. During global infectious disease outbreaks such as COVID-19, airports have become one of the focal points for prevention and control. Protecting the health and welfare of air travelers has become the focus of airports.¹⁰ A study by Abu-rish et al on Zika virus knowledge, attitudes, and determinants of practices among Jordanian and non-Jordanian travelers recommended educational campaigns and awareness strategies regarding Zika within the airports.³⁶ During such outbreaks, airport pharmacies can assist in implementing control measures and work alongside health and quarantine services provided by the government, other airport medical service providers, and airport-based emergency medical services. During the recent COVID-19 outbreak, a report from the Gold Coast International Airport Pharmacy showed pharmacist involvement in providing advice on appropriate protocols and preventions, the latest medical updates, COVID-19 safety measures, and helped to calm down nervous passengers.³⁷ Airport pharmacies can play a vital role in counseling air travelers on appropriate health and hygiene measures, and supplying basic medicines and other protective measures such as appropriate masks, gloves, and hand sanitizers.

Implications for Policy, Practice and Research

The study has several implications for practice and health policy makers. Based on the study findings, we believe that professional and health services at airport pharmacies can be expanded, mainly through travel health services. Airport pharmacies are easily accessible and can help provide health services, patient guidance, and point-of-care health monitoring for travelers. Moreover, airport pharmacies could play instrumental roles during pandemic outbreaks such as the current COVID-19 pandemic. Airport pharmacies can provide health advice and medical updates, necessary medicines, and health products and attend to travelers' queries, especially during flu seasons or other outbreaks. To achieve these goals, we believe it would be beneficial to provide pharmacists with additional

training and certifications in travel health and relevant practices to work at airport pharmacies. In addition, we believe that more research is currently needed to explore opportunities at airport pharmacies and how travelers' health could be better served by pharmacies. In addition, more research and development of practice guidelines are currently needed for the operation and functioning of airport pharmacies given the lack of such materials and specialized guidance in this practice setting and the paucity of data and literature on this topic. Consequently, there is a need to have guidelines for pharmacists practicing at airport pharmacies to ensure quality pharmacy services, given the uniqueness of this practice setting. These include standards regarding pharmacy premises, scope of practice in travel health at airport pharmacies, guidelines on handling and communicating with travelers from different countries, cultures and languages, operational guidelines during pandemics and infectious diseases outbreaks, preventive measures and safety measures, and provision and support during a health emergency at an airport.

Strengths and Limitations

To the best of our knowledge, we believe this is probably the first study in the recent literature that explored the roles of pharmacies in airports. Consequently, we believe the current study highlights many key areas that could provide future guidance to improve pharmacy practice at airport pharmacies and advance pharmacists' role in the field of travel health. However, the study has some limitations. Firstly, this is a qualitative study with fifteen pharmacists working at airport pharmacies from different regions. Therefore, the view of airport pharmacies in our study may not be generalizable to the entire airport pharmacy sector. However, this is not uncommon, as the sample size of qualitative studies is generally small, similar to our study. Hence, we believe that future studies could be cross-sectional quantitative studies involving a larger number of airport pharmacies to provide additional details about airport pharmacies' operation, functioning, and quality of services, including more details in terms of similarities or differences among countries. Secondly, this study used an email based-interview format which did not allow for follow-up questions to further explore additional information provided by the participants. However, we hope that this study could open the door for more studies in this under researched area and more discussions to help provide better health for travelers.

Conclusion

The current study showed that airport pharmacies provide medicines and basic health services to air travelers. Some airport pharmacies also provide dedicated travel health services. As the airline industry expands, an increasing number of people will travel, and airport-based pharmacies could have a more active role in travelers' health and medicine needs. Encouragingly, the pharmacists found their work at airport pharmacies to be exciting and attractive. Since pharmacists can contribute to the health and well-being of both travelers and airport staff, the pharmacy sector needs to collaborate with aviation authorities to bring their expertise in medicines and pharmacy practice to serve the health care needs of air travelers.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethical Approval

The study was approved by the Monash University Human Research Ethics Committee (Project ID: 24848) on 5th June 2020. Written consent was obtained from the participants in the study and the consent included publication of anonymized responses. The study was conducted according to the World Medical Association Declaration of Helsinki.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors state that they have no conflict of interest.

References

1. International Air Transport Association (IATA). Global air traffic - scheduled passengers 2004–2019; 2019. Available from: <https://www.statista.com/statistics/564717/airline-industry-passenger-traffically/>. Accessed November 01, 2019.
2. International Air Transport Association (IATA). *Aviation Economic Benefits*. Montreal: International Air Transport Association (IATA); 2006.
3. Del Chiappa G, Loriga AS. Analysing determinants of travellers' expenditures for food and beverage services at airports. *Mercati Competitivita'*. 2019;2:127–147. doi:10.3280/mc2-2019oa8135
4. Makino T, Asano Y, Takuhiro K, et al. International airport and emergency medical care. *J Nippon Med Sch*. 2002;69(2):185–191. doi:10.1272/jnms.69.185
5. International Air Transport Association (IATA). *Medical Manual*. Geneva: International Air Transport Association; 2008.
6. Airsiders. Kuala Lumpur International Airport [Internet]; 2021. Available from: <https://airsiders.com/health/airport/KUL>. Accessed August 26, 2021.
7. Greater Toronto Airports Authority. DrugSmart Pharmacy [Internet]; 2021. Available from: <https://www.torontoperson.com/en/while-you-are-here/toronto-airport-services/drugsmart-pharmacy>. Accessed August 26, 2021.
8. Australian Pharmacist. Coping with COVID-19 in an airport pharmacy; 2021. Available from: <https://www.australianpharmacist.com.au/coping-with-covid-19-airport-pharmacy/>. Accessed August 26, 2021.
9. Dove DB, Del Guercio LR, Stahl WM, Star LD, Abelson LC. A metropolitan airport disaster plan—coordination of a multihospital response to provide on-site resuscitation and stabilization before evacuation. *J Trauma*. 1982;22(7):550–559. doi:10.1097/00005373-198207000-00005
10. International Civil Aviation Organization (ICAO). *Airport Preparedness Guidelines for Outbreaks of Communicable Disease*. Montreal: International Civil Aviation Organization; 2009.
11. Wright KB, Hmelzer M. Qualitative research: exploring new frontiers. *Gastroenterol Nurs*. 1997;20(3):74–78. doi:10.1097/00001610-199705000-00002
12. Agius SJ. Qualitative research: its value and applicability. *Psychiatrist*. 2013;37(6):204–206. doi:10.1192/pb.bp.113.042770
13. Neergaard MA, Olesen F, Andersen RS, Sondergaard J. Qualitative description—the poor cousin of health research? *BMC Med Res Methodol*. 2009;9(1):1–5. doi:10.1186/1471-2288-9-52
14. Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health*. 2000;23(4):334–340. doi:10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G
15. Maxwell J. Understanding and validity in qualitative research. *Harv Educ Rev*. 1992;62(3):279–301. doi:10.17763/haer.62.3.8323320856251826
16. Bengtsson M. How to plan and perform a qualitative study using content analysis. *NursingPlus Open*. 2016;2:8–14. doi:10.1016/j.npls.2016.01.001
17. Bengtsson M, Ohlsson B, Ulander K. Women with irritable bowel syndrome and their perception of a good quality of life. *Gastroenterol Nurs*. 2007;30(2):74–82. doi:10.1097/01.SGA.0000267924.24180.1a
18. Guest G, Namey E, Chen M. A simple method to assess and report thematic saturation in qualitative research. *PLoS One*. 2020;15(5):e0232076. doi:10.1371/journal.pone.0232076
19. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. doi:10.1191/1478088706qp0630a
20. Fereday J, Muir-Cochrane E. Demonstrating rigor using thematic analysis: a hybrid approach of inductive and deductive coding and theme development. *Int J Qual Methods*. 2006;5(1):80–92. doi:10.1177/160940690600500107

21. DeHart RL. Health issues of air travel. *Annu Rev Public Health*. 2003;24(1):133–151. doi:10.1146/annurev.publhealth.24.100901.140853
22. Singh B. Sickness pattern among air travellers: review of 735 cases at the Oman airport. *Aviat Space Environ Med*. 2002;73(7):684–687.
23. Al-Zurba F, Saab B, Musharrafieh U. Medical problems encountered among travelers in Bahrain International Airport clinic. *J Travel Med*. 2007;14(1):37–41. doi:10.1111/j.1708-8305.2006.00089.x
24. Baker L. The Role of Pharmacists in Travel Medicine in South Africa. *Pharmacy*. 2018;6(3):68. doi:10.3390/pharmacy6030068
25. Thidrickson D, Goodyer L. Pharmacy travel health services in Canada: experience of early adopters. *Pharmacy*. 2019;7(2):42. doi:10.3390/pharmacy7020042
26. Hurley-Kim K, Goad J, Seed S, Hess KM. Pharmacy-based travel health services in the United States. *Pharmacy*. 2019;7(1):5. doi:10.3390/pharmacy7010005
27. D'Souza P. Airport pharmacy: the airport advisor. *Pharm J*. 2016;297:7894.
28. Ferrara P, Masuet-Aumatell C, Ramon-Torrell JM. Pre-travel health care attendance among migrant travellers visiting friends and relatives (VFR): a 10-year retrospective analysis. *BMC Public Health*. 2019;19(1):1397. doi:10.1186/s12889-019-7722-0
29. Yates JA, Rao SR, Walker AT, et al. Characteristics and preparation of the last-minute traveler: analysis of vaccine usage in the Global TravEpiNet Consortium. *J Travel Med*. 2019;26(6):taz031. doi:10.1093/jtm/taz031
30. El-Kurdi R, Rhodes LA, Sauls AD, et al. Assessing barriers to patient acceptance of pharmacist-provided recommendations for international travel. *J Am Pharm Assoc*. 2019;59(4):S72–S76. doi:10.1016/j.japh.2019.04.021
31. Leuthold C, Bugnon O, Berger J. The role of community pharmacists in travel health and vaccination in Switzerland. *Pharmacy*. 2018;6(4):125. doi:10.3390/pharmacy6040125
32. Rosado H, Bates I. *An Overview of Current Pharmacy Impact on Immunisation: A Global Report*. The Hague: International Pharmaceutical Federation (FIP); 2016.
33. Kodkani N, Jenkins JM, Hatz CE. Travel advice given by pharmacists. *J Travel Med*. 1999;6(2):87–93. doi:10.1111/j.1708-8305.1999.tb00838.x
34. Boots UK. A Pharmacist's view on how you can [Internet]; 2020. Available from: <https://www.boots.jobs/pharmacy/locum-pharmacist/>. Accessed December 13, 2020.
35. Gosadi IM, Al-Hazmi AM, Fadl AA, Alharbi KH, Swarelzahab MM. Evaluation of knowledge and behavior of workers in Prince Mohammed International Airport in Western Saudi Arabia regarding public health emergency measures applied during Hajj season 2014. *Saudi Med J*. 2015;36(4):456–462. doi:10.15537/smj.2015.4.10908
36. Abu-Rish EY, Elayeh ER, Browning MJ. Travelers to U.S.: Zika virus knowledge, attitudes, and determinants of practices in the middle east—insights for future awareness campaigns. *Int J Environ Res Public Health*. 2019;16(14):2517. doi:10.3390/ijerph16142517
37. O'Malley M. Coping with COVID-19 in an airport pharmacy [Internet]; 2020. Available from: <https://www.australianpharmacist.com.au/>. Accessed December 13, 2020.

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