Online drug information platform for the public in Hong Kong—Review of local drug information use and needs

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ABSTRACT

Introduction: In view of the popularity of Internet usage in Hong Kong, an interactive web-based drug information platform entitled "Ask My Pharmacist – Online University Led drug Enquiry Platform" (AMPOULE) was launched in 2009 to better serve the needs of drug information in Hong Kong. This paper aimed to evaluate the utility of AMPOULE in improving drug-related knowledge among the public and to reassess the needs of the general public in Hong Kong.

Methods: All enquiries sent via AMPOULE were reviewed. Demographic data, nature of questions and types of drug class covered were analyzed. The workload of pharmacists was examined with respect to the preparation time needed for the enquiry, the lag days to reply and also the timing of enquiry recipient.

Results: 2122 enquiries were received from 2009 to 2017. Most enquirers were from Hong Kong (56.6%) and female gender (49.2%). 13% of the concerned subjects were aged over 61-year-old. The most frequent types of questions and medications covered were "Drug Ingredients and Indications" (28.0%) and Adverse Drug Reactions (26.8%) and "Cardiovascular Medication" (21.9%) respectively but these varied in different age groups or enquirer groups. The median time for preparation was 40.0 min (IQR: 25–65 min) while the median time lag was found to be 2.5 days (IQR: 1.0–5.0 days). The number of enquiries received was evenly distributed throughout the day except during 1:00 am to 9:00 am and 7:00 pm to 8:00 pm.

Conclusion: AMPOULE has demonstrated that an online platform providing patient-oriented drug information service through the Internet is promising and further promotion is warranted. Current data suggested that the need of different age groups and enquirer groups are different and should therefore be individualized.

1. Introduction

Internet has now become a vital part of everyday life worldwide: citizens in Hong Kong considered the Internet as an important and reliable source for information, and many more communicated through the Internet every day [1]. At the same time, information about medicines are available everywhere on the Internet. This could be a potential novel means for the public to obtain drug information, in addition to the traditional approach of asking medical professionals through telephone conversation or face-to-face contact.

A number of surveys conducted overseas showed that drug information service has both clinical and economic impact on improving patient outcome [2]. Based on Wyatt's criteria, several drug information websites available to Hong Kong citizens were evaluated according to their (i) readability of material; (ii) coverage and accuracy of content material; (iii) navigation through material; and (iv) profile of users and the traffic of website. It was found that the existing online drug information resources may not be of a high quality or able to pose a

significant impact to the Hong Kong general public, either due to the language barrier (especially for non-Chinese sites), lack of accuracy (in the form of discussion forums), lack of comprehensiveness in drug items, or lack of visitors. It appeared that the current resources available were unable to meet the needs in Hong Kong [3]. Therefore, we have developed the first interactive web-based drug information platform entitled "Ask My Pharmacist – Online University Led drug Enquiry Platform" (AMPOULE) [www.ampoule.org.hk] in Hong Kong in 2009 to better serve the needs of the citizens by providing professional and personalized services.

One of the most important features of AMPOULE is the interactive component named "Ask My Pharmacist", which allows the public to seek for pharmacists' advice when they have health enquiries or questions related to drugs. Enquirers would leave their questions using a standard form on the webpage. Pharmacists would then provide personalized suggestions and solutions through emails, web conferences or phone calls according to the preferences of the enquirers. Other sections resembling other existing international drug information websites

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include "Health Info", "Tips on Drug Use", "New Medicines" and "Downloads". "Ask My Pharmacist" is restricted to AMPOULE member only while other sections are open to all general public. All enquiries would be addressed within 48 h.

In the past eight years, over 2100 enquiries were raised via AMPOULE. This review aimed to evaluate the utility of AMPOULE in improving drug-related knowledge among the public and to reassess the needs of drug information in Hong Kong.

2. Methods

A standard form consisting "Question for pharmacist", "Drug Name" and "Preferred Contact Method" were used to collect the enquiries when accessing the "Ask My Pharmacist" session in AMPOULE. Enquirers may also provide the demographic data of the concerned individuals and drug images at their discretions.

Demographic data of the concerned individuals, including their gender and age, and the country of origin and preferred language of the enquirers, were collected for analysis. All enquiries were analyzed based on the nature of enquiries and types of medications covered in the enquiries. The nature of enquiries was categorized into "Adverse Drug Reactions", "Active Ingredients and Indications", "Drug Administration and Storage", "Drug Interactions", "Pregnancy and Lactation", "Drug Safety" and "General Health Enquiry" [4] while the types of medications covered in the enquiries were grouped according to the classification in British National Formulary (Appendix A) [5]. Both nature of enquiries and types of medications covered were classified by our pharmacists upon the recipient of enquiry. Further analysis was conducted according to the "enquirer group", defined as the relationship between enquirers and concerned subjects, and the "age group" of the concerned subjects.

The workload of the pharmacist was examined using the time for preparation for the enquiry and the time lag of reply. The time needed for preparation and time lag of reply were also analyzed based on the number of types of enquiries and classes of medication covered. The timing of recipient of enquiry was used to reflect the distribution of workload.

Discrete variables were presented using the frequencies and percentages while distribution of continuous variables was described using median, 25th and 75th percentiles. All the analyses were conducted using Microsoft Excel 2016.

3. Result

3.1. Demographics of users

A total of 2122 enquiries were received via AMPOULE during 2009–2017. The proportion of female enquirers (1044, 49.2%) were similar to male enquirers (1018, 48.0%). Most enquiries targeted at elderly population (Aged 61 or above: 285, 13.4%), tthan half of the enquiries did not disclose the age range of the concerned subjects. Most enquiries were made for their own self (693, 32.7%). There were 177 enquiries (8.3%) asked questions about their family members and relatives and 192 enquiries (9.0%) for elderlies living in elderly homes. Most enquirers were from Hong Kong (1201, 56.6%) and there were significantly more enquiries in Chinese (1699, 80.2%) than in English (421, 19.8%). Five common "Enquirer Groups" were identified. In addition to raising question for themselves ("Self"), people were also eager to use AMPOULE on behalf of their family members ("Family") and friends ("Friends"). "Social Workers" and staff working in Old Age Home ("Old Age Home") were also two main groups of enquirers.

Table 1 summarizes all the demographic data of enquirers using AMPOULE.

Table 1
Demographic Data.

Number of Enquiries		2122	
Gender	Female	1044	49.2%
	Male	1018	48.0%
	Not Stated	60	2.8%
Age		50.3 (19.5)	
Age Group	1–10	20	0.9%
	11–20	29	1.4%
	21–30	144	6.8%
	31–40	91	4.3%
	41–50	149	7.0%
	51–60	207	9.8%
	> 61	285	13.4%
	Not Stated	1197	56.4%
Origin of Enquirer	Hong Kong	1201	56.6%
	China	18	0.8%
	Taiwan	10	0.5%
	Others	74	3.5%
	Not Stated	819	38.6%
Language	Chinese	1699	80.1%
	English	421	19.8%
Enquirer Group	Self	693	32.7%
	Family	177	8.3%
	Old-Age Home	192	9.0%
	Friends	53	2.5%
	Others	21	1.0%
	Not Stated	986	46.5%

3.2. Nature of enquiries

The most frequent enquiries were related to "Drug Ingredients and Indications" (594, 28.0%) and "Adverse Drug Reactions" (569, 26.8%) which was consistent among nearly all age groups. It is observed that a number of adolescents (11–20 years old), younger adults (21–30) and elderlies (61 or above) were particularly concerned about proper "Drug Administration and Storage", ranging from 17.2% to 22.9% of the total enquiries of these age groups. In addition, "Drug Safety" was found to

Table 2
Number of enquiries by types of questions and medications covered.

Nature of Enquiries	Adverse Drug Reactions	569	26.8%
	Drug Ingredients and Indications	594	28.0%
	Drug Administration and Storage	201	9.5%
	Drug Interactions	157	7.4%
	Pregnancy and Lactation	49	2.3%
	Drug Safety	138	6.5%
	Health Enquiry	105	4.9%
	Others	776	36.6%
	Total	2223	
Drug Class	Gastrointestinal	228	10.7%
	Cardiovascular	465	21.9%
	Respiratory	196	9.2%
	Central Nervous System	287	13.5%
	Infectious Diseases	127	6.0%
	Endocrinology	194	9.1%
	Obstetrics, Gynaecology and Urinary Tract Disorders	65	3.1%
	Malignant Diseases and Immunosuppression	56	2.6%
	Nutrition and Blood	61	2.9%
	Musculoskeletal and Joint Diseases	164	7.7%
	Eye	14	0.7%
	Ear, Nose and Oropharynx	27	1.3%
	Skin	109	5.1%
	Immunological Products and Vaccines	17	0.8%
	Anesthesia	2	0.1%
	Anti-inflammatory Enzyme	4	0.2%
	Others	601	28.3%
	Total	2617	