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## **Consumer Internet purchasing of medicines using a population sample: a mixed methodology approach**

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Online Medicines

Abstract

Background: Malta has an average of 3-4 private community pharmacies per locality, providing patients with easy access to medicines yet according to general statistics gathered from European organisations, Internet is used to purchase various online products with medicines being amongst them.

Objectives: To identify patterns around internet purchasing of medicines among Maltese residents

Methods: The study followed a mixed methods approach, employing a cross-sectional survey followed by semi-structured interviews. A random sample of 1996 residents were selected from the Maltese electoral

register to participate in a postal questionnaire designed to gather data about purchasing prescription-only-medicines (POM) as well as over-the-counter (OTC) medicines. Results were analysed using descriptive statistics and Chi-square to establish associations between responses. Five interviews investigated participants' concerns related to sourcing of medicines. The participants were purposively chosen from the questionnaire respondents. Data were analysed using thematic analysis.

Results: The survey had a 22% response rate (N=444) (60% female; mean age 52 years+/-17). Two (0.45%) participants reported purchasing POMs online in the past, while 4.3% (n=19) purchased OTCs including vitamins, supplements and herbal combinations. The main reasons for OTC online purchasing were lack of local availability (n=6; 1.4%) and lower price (n=11; 2.5%). A total of 89% (n=395) of respondents provided a reason for not purchasing online, with safety issues being the primary reason for 41% (n=181) of these. Interviewees expressed disregard towards internet purchasing of medicines that was evident from the themes that emerged: definition of 'medicines', health autonomy and trust in self-care, relationships and trust in health professional, restrictions of medicine supply, influence of cost, need for options.

Conclusions: The Maltese appear to be rather cautious and do not purchase POMs online, citing the risks that may be associated with internet purchasing. With regards to OTCs, a small percentage purchase these online and exposing them to risks associated with unauthorised sites.

## 1. Introduction

The Internet allows access to a large variety of medicinal products.<sup>1-8</sup> A systematic review conducted by Orizio et al. estimated that no more than 6% of the general population around the globe purchase medicines from internet pharmacies.<sup>9</sup> A recent large study on Hungarian outpatients showed that 4.17% of the respondents purchase medicines online.<sup>10</sup> Yet Saudi Arabia have a lower trend of 2.7% however respondents showed interest in doing so in the future.<sup>11</sup> The challenge for the online customer is to choose safe medicines from reliable sources. As the Internet is an open and unregulated gateway to pharmaceutical business, this can result in its misuse by many ill-intentioned individuals who may profit from vulnerable people. This may be because of products illegally supplied such as narcotic analgesics, stimulants such as amphetamine and antidepressants<sup>12</sup> or because of counterfeits<sup>13</sup>. These have included anti-inflammatory medicines, hypnotic and sedative agents, slimming tablets, treatments for HIV, Parkinson's and diabetes.<sup>14</sup> Recent reports from the Medicines and Healthcare products Regulatory Agency, UK (MHRA) claim that 1 in 3 individuals who are trying to lose weight, bought slimming products online and that a large number of them (63%) reported suffering from unpleasant side effects. The report referred to 2016 when more than 4.6 million fake medicinal products were seized by the MHRA who also closed down more than 5000 websites selling medicines illegally.<sup>15</sup> Regulators around the world are working with the manufacturing industry to protect the production and distribution lines through mandatory measures such as 'mass serialization.'<sup>16</sup> The European Commission has implemented the Directive

2011/62/EU on falsified medicines for human use whereby it harmonises safety and strengthens control through outer packaging features, obligatory logo amongst other procedures.<sup>17</sup> However, gaps may still exist where exploitation can take place.<sup>16</sup> In addition, fast advances in digital technology are continuously changing how healthcare is delivered and has also been attracting online commerce companies like Amazon.

Other concerns regarding the purchase of online medicines include bypassing the prescription as well as the medication review.<sup>18</sup> A serious illness could be misdiagnosed or untreated due to attempts at self-diagnosis.<sup>19</sup> However, one cannot deny that the Internet has the characteristic of being appealing to customers due to its speed, convenience and cost savings.<sup>20,21</sup> Access is allowed at any time of day, from any country at prices that patients can compare, often allowing them to have lower prices than from traditional pharmacies.<sup>22,23</sup> Fittler et al report convenience as one of the most regularly communicated benefits. In addition, patients may also feel that the lack of face-to-face communication avoids potentially embarrassing conversations with the pharmacist in a busy pharmacy.<sup>22,23</sup>

Location and opening hours are highly rated factors that influence customer selection of pharmacy.<sup>24</sup> Malta's situation is particular because of its small size and dense population and pharmacies are located in Malta and Gozo within short distances from each other. The community pharmacist is considered to be a core health professional within the Maltese community involved in the patient's medicines management. This may be attributed to Malta having the highest workforce of pharmacists per 10,000 population.<sup>25</sup> Previous local studies have looked at the consumer-pharmacy relationship showing that the main reason for the majority of consumers (around 90%) for visiting the pharmacy was mainly to purchase prescription medicines, while 65% was to purchase non-prescription medicines. Seventy-five percent confirmed that they would rely on the community pharmacist's choice when purchasing a non-prescription medication.<sup>26</sup> In another study, over 62% of a Maltese sample of 912 members of the public showed loyalty to the same pharmacy.<sup>27</sup> With regard to internet use in Malta, 77% of the total population aged 16 to 74 use the Internet regularly<sup>28</sup> however the law does not allow for internet pharmacies to operate in Malta. Nevertheless, it is important to understand whether people in Malta are obtaining their medicines online. In view of this, it should be noted that Maltese legislation allows purchases of medicines through internet pharmacies in the EU as long as these are supplied according to the classification of the medicine in Malta. Therefore if in Malta the medicine is a prescription medicine, then the internet pharmacy should dispense that medicine against a prescription also.

Further to this, past research about online medicines' purchasing trends, has typically involved surveys that have generalized the term 'medicines' to include all types of medicines, vitamins and dietary supplements. Furthermore, national surveys, that seek to involve a representative sample of participants are lacking. This research focuses on a random sample representative of the population within a country where people have easy access to internet yet have accessible 'brick-and-mortar' private pharmacies and the highest pharmacist workforce per 10,000 capita. A mixed methods approach was used with the

objectives of: 1) gathering information about medicines purchasing practices, 2) understanding the proportion of online purchasing of medicines and 3) exploring the types of medicines purchased online.

## 2. Method

Ethics approval was obtained in December 2016 from the Malta University Research Ethics Committee (UREC) and from the University of Bath Research Ethics Approval Committee for Health (REACH) in November 2016 with reference EP 16/17 032.

### 2.1. Quantitative study

A questionnaire (available upon request) was developed based on previous studies<sup>20,29,30,31</sup> and designed to gather data about sources of purchase of prescription-only-medicines (POMs) and over-the-counter (OTCs) medicines separately. It included a section on questions asking whether respondents ever purchased POMs online followed by a separate section on whether respondents ever purchased OTCs online. Definition of the two categories was explained as being those medicines requiring a prescription or not. Examples were also given. Questions followed to identify reasons for and against purchasing medicines online. The questionnaire was in both the English and Maltese language since these are the two official languages in Malta. The translation was evaluated by the Head of department of Translation, Terminology and Interpreting studies, Faculty of Arts, University of Malta. A back translation was also carried out to ensure that as far as possible the translations from English to Maltese and back to English were accurate. This would mean that each respondent would be asked the same question regardless of the language it was presented in. The questionnaire underwent several designs and formatting stages with a professional graphics design company. It was tested in two stages, a cognitive testing stage among 5 respondents that included colleagues and friends followed by a pilot stage among another 10 respondents. Feedback from the first stage was analyzed and amendments incorporated into the questionnaire such as more direct wording and consistent wording for instructions. The second stage highlighted the need to arrange the sequence of questions. The questionnaire was then distributed to a random sample of the Maltese population.

#### 2.1.1. Sampling

Malta's adult population as at 2016 was approximately 350,000<sup>32</sup> and therefore a representative sample includes an ideal estimate of 600 respondents. This number was calculated using online random sample calculators to provide a confidence level of 95% with margin of error of 4%.<sup>33,34</sup> Yet an expected response rate, based on other local studies, was taken as 25% and therefore the sample size was calculated to be approximately 2000 participants.<sup>33,34,35</sup>

Inclusion criteria included any adult person (18 years and over) and resident in Malta. The random sample was selected from the national electoral register that is updated twice a year. A sample of 1996 persons registered as voters in the October 2016 General Elections Register was retrieved from the electoral commission's database using the in-built random number generator package called 'dbms\_random'.<sup>36</sup>

#### 2.1.2. Questionnaire dissemination

The scope of the survey was explained in a covering letter attached to the questionnaire. Anonymity was guaranteed in this covering letter. The questionnaires were posted together with a separate sheet on which the respondent could leave their contact details to take part in a draw towards an €80 voucher incentive, in an attempt to increase the response rate.<sup>37</sup> A signed, personalized (hand-written) 'post-it'<sup>38</sup> was attached to each questionnaire thanking the participant in advance. The filled questionnaires were returned by post through the self-addressed envelopes provided with the original questionnaires. Data were gathered between the dated stipulated, between the 1<sup>st</sup> and 31<sup>st</sup> March 2017. No reminders were sent due to cost since this was a self-funded study. Furthermore, if reminders were sent only to those who have not replied, then anonymity would have been compromised.

#### 2.1.3. Statistical analysis

Responses were coded and entered into SPSS version 24 and analysed through descriptive statistics. Chi-square tests were done to establish associations between demographics and various responses. The p-value of less than 0.05 was considered to be statistically significant.

#### 2.2. Qualitative study

The qualitative study was conducted to clarify the findings of the quantitative study. Therefore participants were recruited from the survey respondents who showed an interest to take part in a semi-structured interview at a later stage. This was done by sending a separate sheet with the questionnaire on which they were free (opt-in) to list any contact number or email. Five of these respondents were purposively chosen among those who claimed to have purchased a medicinal product online with the aim to obtain data that was rich enough to provide enough depth to support the findings of the survey regarding online purchasing of medicines. The interviewees were chosen to include different ages, both genders and different occupations. They were conducted by CB using a set of questions, approved by the ethics board, at a place convenient for the participant or over the phone. The participants were informed that the interview would be audio recorded for analysis purpose and a written consent was obtained in advance. Interviews were conducted in whichever language the participants had chosen for their questionnaire responses.

Questions sought to gather data about how participants define a medicine, cost related issues with purchasing medicines, supply and access. The data was transcribed verbatim and analysed using

thematic analysis that took an inductive approach allowing the coding process to evolve and therefore generate unanticipated insights. The data were coded by CB. Another coder, JS, supervised the process and coded one interview as a check and discrepancies were discussed.

### 3. Results

#### 3.1. Sample demographics

A total of 444 surveys were completed giving a response rate of 22%. A significant difference with respect to gender, ( $\chi^2 (1) = 18.938, p < 0.001$ ), and age, ( $\chi^2 (7) = 32.373, p < 0.001$ ) was seen between sample and population. The majority of the respondents were female (59.5%, n=264) and this trend was consistent within each age group, (Table 1). The mean age of respondents was 51.7 years (SD +/-17) while the median was 54.

**Table 1.** Demographics of respondents (N=444) compared to general population

<i>Demographic type</i>	<i>Sample (N=444)</i>	<i>Sample frequency as %</i>	<i>Maltese Population frequency as %</i>
<b>Gender</b>			<i>364,544 over 18-year olds as on December 2016</i>
<i>Male</i>	<i>172</i>	<i>38.7</i>	<i>49.87</i>
<i>Female</i>	<i>264</i>	<i>59.5</i>	<i>50.13</i>
<i>Missing data</i>	<i>8</i>	<i>1.8</i>	
<b>Age</b>			
<i>18-24</i>	<i>29</i>	<i>6.5</i>	<i>10.6</i>
<i>25-34</i>	<i>63</i>	<i>14.2</i>	<i>18.3</i>
<i>35-44</i>	<i>59</i>	<i>13.3</i>	<i>16.8</i>
<i>45-54</i>	<i>74</i>	<i>16.7</i>	<i>14.5</i>
<i>55-64</i>	<i>100</i>	<i>22.5</i>	<i>16.3</i>
<i>65-74</i>	<i>79</i>	<i>17.8</i>	<i>14.4</i>
<i>75-84</i>	<i>30</i>	<i>6.8</i>	<i>6.9</i>
<i>85-91</i>	<i>5</i>	<i>1.1</i>	<i>2.3</i>
<i>Missing data</i>	<i>5</i>	<i>1.1</i>	
<b>Region</b>			<i>Data of 2015</i>
<i>Southern Harbour</i>	<i>77</i>	<i>17.3</i>	<i>18.4</i>
<i>Northern Harbour</i>	<i>123</i>	<i>27.7</i>	<i>29.5</i>
<i>South Eastern</i>	<i>67</i>	<i>15.1</i>	<i>15.5</i>
<i>Western</i>	<i>72</i>	<i>16.2</i>	<i>13.7</i>
<i>Northern</i>	<i>71</i>	<i>16.0</i>	<i>15.5</i>
<i>Gozo &amp; Comino</i>	<i>24</i>	<i>5.4</i>	<i>7.29</i>
<i>Missing data</i>	<i>10</i>	<i>2.2</i>	
<b>Education level</b>			
<i>Primary</i>	<i>66</i>	<i>14.9</i>	<i>17.9</i>
<i>Secondary</i>	<i>181</i>	<i>40.8</i>	<i>39.2</i>

<i>Post secondary/Tertiary and higher</i>	190	42.8	41.8
<i>Missing data</i>	7	1.6	

### 3.2. POM use among respondents

Fifty percent of respondents (n=222) stated that they had experienced using prescription-only medicines (POM) for themselves for a short period followed by n=206 (46%) respondents who needed them for longer periods of time. Forty percent (40.8%) of respondents “bought all of their required POMs” when they needed to take them, followed by 35.4% who said they get “some from government health services and also buy some”. The majority who buy POMs reported that they do so because they are not entitled to get them for free through the national health service (NHS) (n=170; 38% of total respondents) followed by 25% (n=113) claiming that the medicines are not available from the NHS.

### 3.3. Sourcing of POM medicines

Eighty-seven percent of respondents (n=388) indicated purchasing of POM medicines from a private or hospital pharmacy in Malta. Three of these respondents also purchased medicines from pharmacies while abroad. One of the latter explained that he used to buy cetirizine tablets online from reliable sites due to cheaper prices than he could find locally but it is no longer possible due to local restrictions. Another respondent claimed that he bought tadalafil used for erectile dysfunction occasionally online without a prescription because it is cheaper than that available locally. He further indicated searching a ‘professional-looking site’ and the doctor was aware of this practice. However, he claimed to develop shaking of his arm and decided to stop them. He explained further that he did not experience this effect again after buying them locally. Therefore there were only 2 (0.45%) respondents who had purchased POMs in the past but not anymore.

### 3.4. Sourcing of OTC medicines

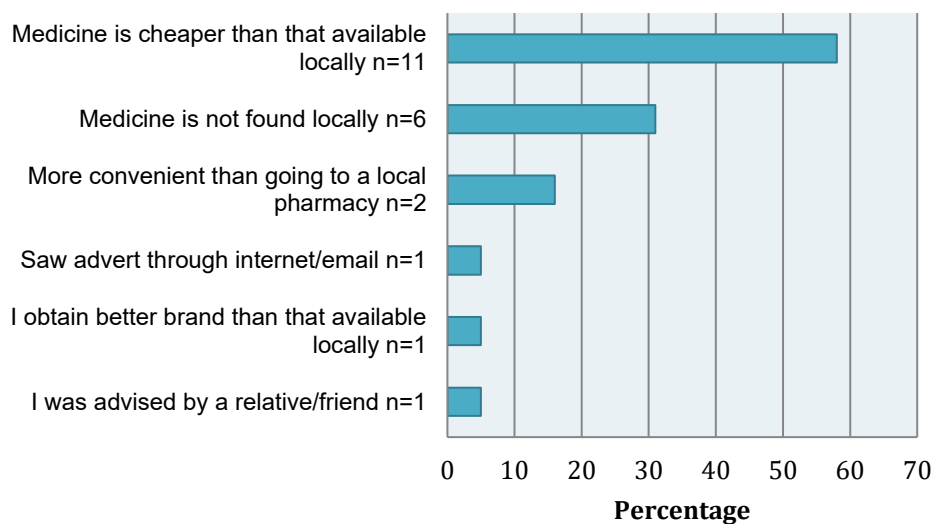
Eleven percent (n=51) of respondents purchase or have purchased OTCs through the Internet for themselves or a family member. However, only 4.3% (n=19) of these participants gave reasons for purchasing online, 7% (n=32) did not answer the follow-on questions to explain their purchase online and therefore it was not clear whether they actually did purchase medicines online or not. Most of the participants who bought OTCs online in the current study were also educated at the tertiary or postgraduate level, the largest group was between the age of 35-44 and gender did not seem to make a difference.

The responses from the 19 participants gave reasons for purchasing online as seen in Figure 1. Items purchased were mostly supplements and vitamins. Examples included glucosamine and chondroitin, lecithin, multivitamins for children, vitamin B complex, L-Theanine. Other products included lactase tablets,

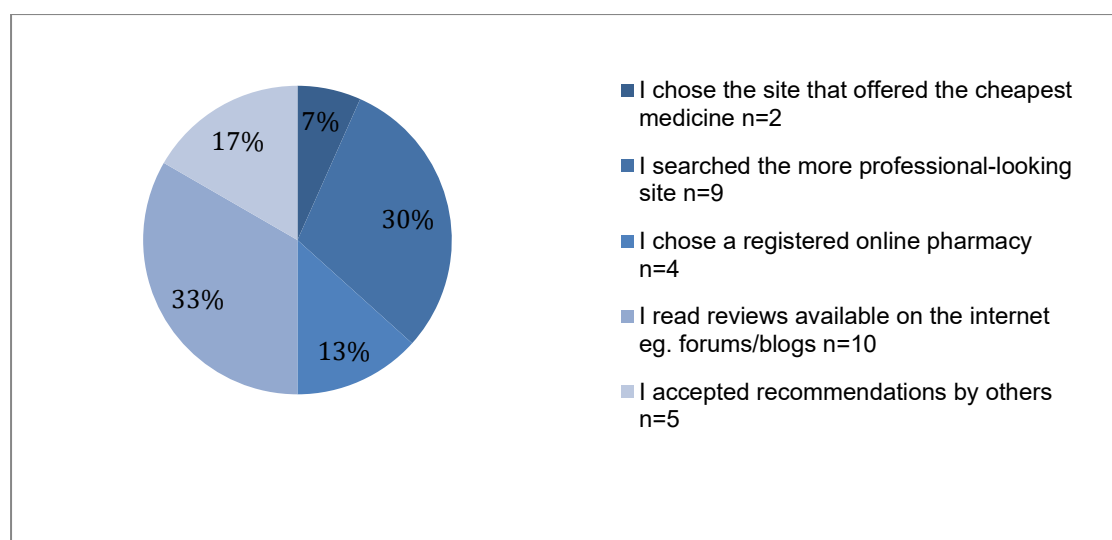


minoxidil and herbal preparations e.g. valeriana products. Thirteen of these participants answered the relevant question indicating reasons for purchasing online while 6 answered both this question as well as the question indicating reasons for not purchasing medicines online. These respondents were allowed multiple responses about how they chose the Internet site to purchase from. Their responses are illustrated in Figure 2. Three of these 19 have reported having problems with internet purchasing as follows:

- “getting hyper” (having lots of energy) with purchase of PABA (para aminobenzoic acid used for skin conditions) (n=1) (translated from Maltese)
- ‘some site stopped delivering to Malta for various reasons’ (n=1)
- ‘one scam company with direct debit, unable to cancel’ (n=1)



**Figure 1.** Percentage of reasons for purchasing OTC medicines online (n=19)



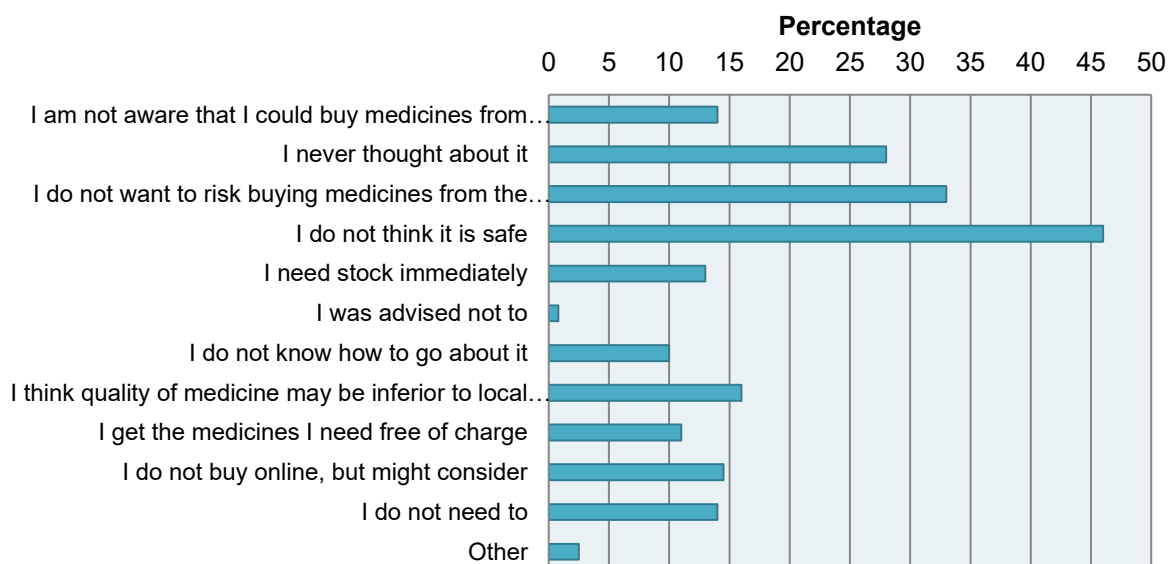
**Figure 2.** How internet sites were chosen by respondents referred to in Fig 1.

### 3.5. Reasons for not purchasing any type of medicine from the Internet

Eighty-nine percent (n=393) of respondents gave one or more reason for not purchasing medicines online, (Figure 3). A significant association was found between age and participants' response "I never thought about it",  $\chi^2(4) = 20.208, p < .001$  (Table 2). Those aged 18-34years (42%) and 45-54years (37%) were the respondents who were most likely to report they had "never thought about" purchasing medicines online. More respondents than expected in the 18-34year ( $z = +/ - 3.2$ ) and 55-64year ( $z = +/ - 3.4$ ) age groups said that they had never thought about using internet to buy medicines.

A significant association was found between age and the response "I do not think it was safe" to purchase medicines online,  $\chi^2(4) = 9.780, p = .044$ . The youngest age group of 18-34years (56%) followed by those aged 55-64 (53%) were the age groups who most commonly chose this. More respondents within the age groups 18-34year ( $z = +/ - 2.1$ ) and >65years ( $z = +/ - 2.1$ ), than expected said that they do not think it is safe to buy medicines online.

Respondents' level of education also was significantly related to whether they reported that they "do not think it is safe" to purchase medicines online,  $\chi^2(2) = 13.952, p = .001$ . Those with higher levels of education were more likely to report that purchasing medicines online is not safe. Fifty-three (53%) of respondents within the education level group of post secondary or higher (table 2) specifically chose the option that they "do not think it is safe" to purchase medicines online as being the reason for them not doing so. This percentage was followed by 46% within the secondary level education group and lastly 25% within the primary level. The z score ( $+/ - 3.4$ ) (adjusted standardised residual) for the primary education group was significant and also that of post secondary or higher ( $z = +/ - 2.6$ ) indicating that more than expected respondents within these two categories answered that they do not think it is safe to buy medicines online.



**Figure 3.** Percentage of reasons for not purchasing medicines online (n=393)

**Table 2** Association between demographics and the most common reasons for not purchasing medicines online

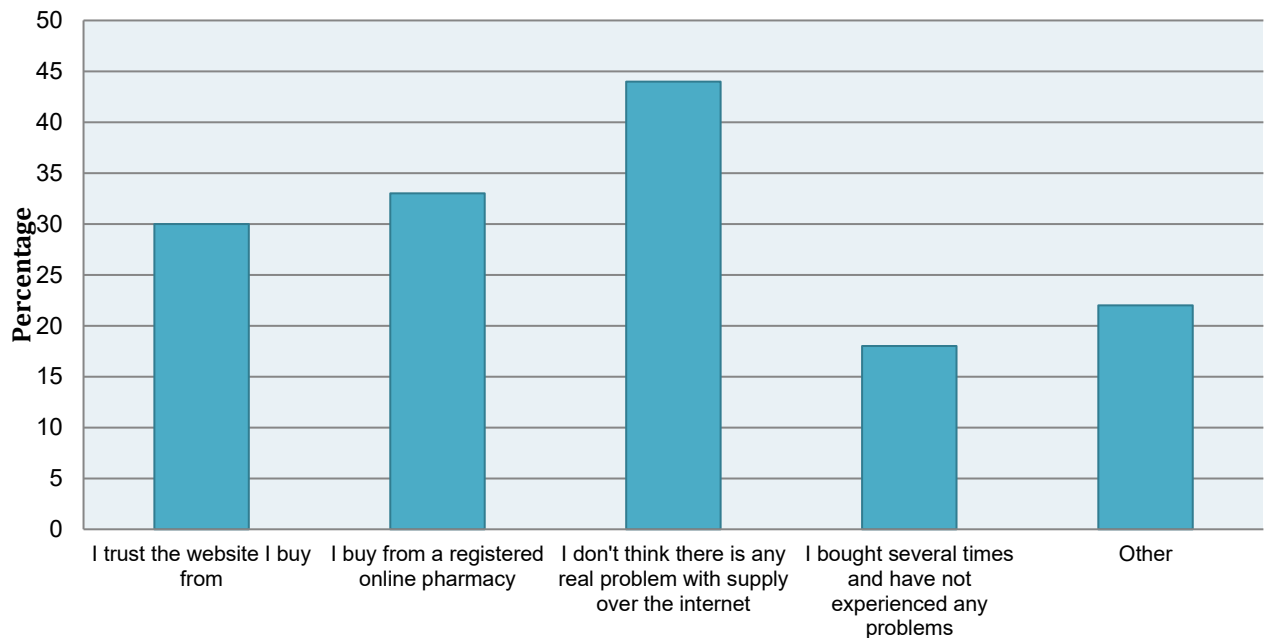
	I never thought about it	I do not want to risk buying medicines from the internet which are POMs in Malta	I do not think it is safe
<b>Age</b>	<b>Counts (% within age group)</b>		
18-34years	36 (42%)	28 (33%)	48 (56%)
35-44 years	11 (21%)	17 (32%)	20 (38%)
45-54 years	23 (37%)	20 (32%)	28 (44%)
55-64 years	13 (14%)	35 (39%)	48 (53%)
>65 years	28 (28%)	30 (30%)	37 (37%)
Association with age (df 4)	<b>Chi-square 20.208</b> <b>p = &lt; 0.001</b>	Chi-square 1.704 <i>p</i> = .790	<b>Chi-square 9.780</b> <b>p = .044</b>
<b>Gender</b>	<b>Counts (% within gender)</b>		
Male	36 (24%)	56 (37%)	73 (48%)
Female	75 (31%)	73 (30%)	108 (45%)
Association with gender (df 1)	Chi-square 2.503 <i>p</i> = .114	Chi-square 1.865 <i>p</i> = .172	Chi-square 0.417 <i>p</i> = .518
<b>Educational level</b>	<b>Counts (% within educational levels)</b>		
Primary	19 (32%)	18 (31%)	15 (25%)
Secondary	38 (24%)	60 (38%)	72 (46%)
Post secondary/tertiary/postgrad	54 (31%)	52 (30%)	93 (53%)
Association with educational level (df 2)	Chi-square 2.484 <i>p</i> = .289	Chi-square 2.677 <i>p</i> = .262	<b>Chi-square 13.952</b> <b>p = .001</b>

Missing included not applicable or omitted, n=51

### 3.6. Perceived problems associated with buying online

Forty-one percent (n= 184) answered that they think it would be “very likely” (n=73) or “likely” (n=111) to come across a problem with medicines bought over the Internet. A very large number of respondents (n=163; 37%) omitted the question. Respondents (6%) who answered they would be “unlikely” or “very

unlikely” are seen in Figure 4. Those who chose ‘other’ included responses that if they had to buy from the Internet, they would choose a trusted registered pharmacy/source.



**Figure 4.** Percentage of respondents who answered ‘unlikely’ or ‘very unlikely’ to come across a problem (n=27)

### 3.7. Opinion of quality of medicines available online and the existence of counterfeits.

Of those who responded to the question about whether they think that the quality of medicines bought online is the same as that bought from the pharmacy, 36% (n=161) ‘neither agreed nor disagreed’ while 28% did not provide a response. Although the question did not specify whether the quality is inferior or superior, reference to Figure 3 shows that 16% (n=65) of respondents who gave reasons for not purchasing online had actually chosen the option ‘I think quality of medicines may be inferior to local’. More than half of the respondents (54.7%; n=243) were aware of counterfeit or false products being available over the Internet. Sixteen percent (n=70) gave further detail related to lack of trust of the Internet and of medicines’ quality purchased through it. Only one explained that buying a product such as Lecithin (supplement used for hypercholesterolemia and neurologic disorders) does not have harmful effects.

### 3.8. Comparison of trust in sources of information about medicines

The largest group of participants (n=409; 92%) indicated that their doctor is the most reliable source of information. Yet the pharmacist was trusted by 52% (n=231) of the respondents and 23% trusted the patient information leaflet. The Internet was trusted by only 43 respondents (10%), half of which also indicated trust in their doctor.

### 3.9. Respondents’ general feedback

Some respondents (21%; n=92) used the free text section to express their concerns and experiences related to medicines and their supply. The most common comments were related to high cost of medicines in Malta (n=15), reliance on doctor's advice (n=12), satisfaction with medicines supply in Malta (n=11) and dissatisfaction with supply (n=11). This feedback supported the generation of questions set for the interview guide (can be requested from author) used in the qualitative part of the study.

### 3.10. Interviews

Transcripts of the interviews were coded and themes generated as shown in the thematic map in Figure 5 and explained below. Participants were anonymised and given pseudonyms for descriptive purposes. Each participant with the pseudonym is described in Table 3

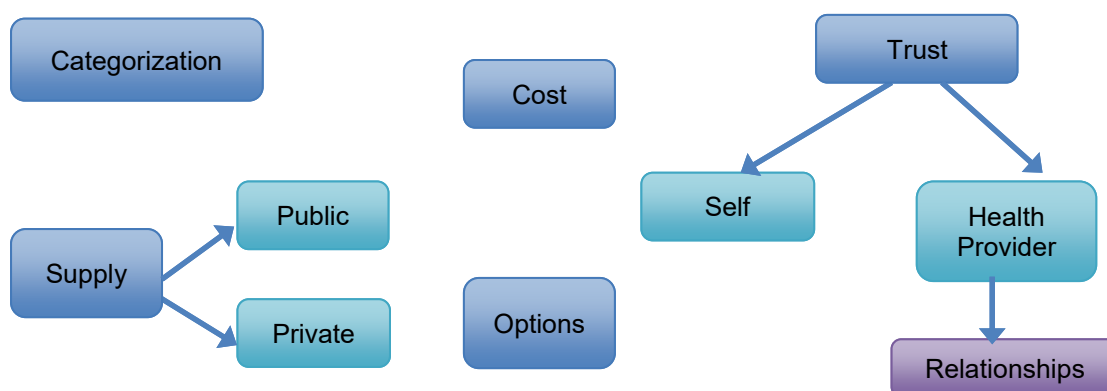


Figure 5. Thematic Map for themes that emerged from thematic analysis

**Table 3.** Interviewee's characteristics

Pseudonym	Sex	Age	Education	Occupation	Condition/illness	Online Purchase	Comment
<b>Chloe</b>	F	41	Postgrad	Full time	Asthma High BP Cancer	No	<ul style="list-style-type: none"> <li>• Needed POM for a short period of time</li> <li>• Buys all her medicines from pharmacies in Malta and a couple of times from pharmacies abroad</li> </ul>
<b>Paulette</b>	F	59	Secondary	Unemployed	High BP; High cholesterol	No	<ul style="list-style-type: none"> <li>• Needs chronic POM</li> <li>• Gets POMs all free from NHS</li> </ul>
<b>Kenneth</b>	M	41	Tertiary	Full time	nil	Yes	<ul style="list-style-type: none"> <li>• Buys vitamins directly online from the manufacturer for his daughter</li> </ul>
<b>Winston</b>	M	24	Postgrad	Student	Asthma Rheumatoid arthritis	Yes	<ul style="list-style-type: none"> <li>• Purchases medicines from online pharmacies</li> </ul>

							during his residence abroad
Lilly	F	61	Tertiary	Full time	High cholesterol	No	<ul style="list-style-type: none"> <li>• Buys when she needs from pharmacy in Malta</li> <li>• Is not clear whether she bought online before but now she gets a supplement through a friend from abroad because it is not available in Malta</li> </ul>

### 3.10.1. Importance of knowledge of categorisation of medicines

A medicine has been mostly referred to as a product that could be natural, chemical or more powerful. However, it was described mainly as that which the doctor prescribes. With regards to OTC products, the term was not clearly defined by the participants. Of particular concern was Lilly's lack of consideration of paracetamol as a medicine.

*"A medicine would be something more or less prescribed by a doctor. I mean a vitamin doesn't have to be, it can be bought over the counter (.) emm I don't know if you classify ah paracetamol as a medicine it can be bought (.) but medicines for me are defined yes against a doctor's prescription" Lilly*

Yet an important observation was that despite this opinion, the participant still had a sense of awareness about safety issues with certain products although she does not classify them as medicines.

*"...You need you need (.) you need guidance basically I'm sure it can be quite effective but you need guidance because herbs and eeee(.) let's say the biological side of medicine (.) it can have very serious I mean consequences" Lilly*

### 3.10.2. Role of health autonomy and trust in self-care

Participants took interest and read up about their medications whether they had a medical background or not. Individuals participate towards their treatment goals. Paulette is very aware and fearful about her conditions and therefore takes a self-care attitude of being faithful to what her doctor advises her. She confides that she is unlike her husband who is more liberal in the way he cares for himself.

*"... before I take anything, it's either because I have hypertension and cholesterol and so I am scared, you understood? I am scared and so I do not just ((pause)) I like to ask" Paulette*

Chloe would not get OTCs from sources such as the Internet because she does not trust this route. Her lack of trust in the Internet is a principle of self-care by which she abides.

*"I don't mess (.) with getting, I don't buy, I buy a lot of things online except medicine. I don't think that's (.) right because I would want to know from where it is originating. I don't trust the internet for that." Chloe*

Lilly expressed not wanting to be a “guinea pig” and would do what she can to prevent taking any treatment if this can be avoided, while also declaring having “absolute inhibitions” about internet purchasing related to her physical self.

*“medicines and food (.) never ((pause)) I mean I really think the market is flooded with rubbish ((pause)) and there needs to be more control” Lilly*

### 3.10.3. Importance of Relationships and Trust in care provider

The importance of being aware of the various professional roles in healthcare is important so as to appreciate how an individual can be helped. This in turn gives the basis for building a relationship with the care providers and subsequently trusting them with knowledge about medicines. This trust is important in determining the source of purchase of medicines making online purchase from unknown sources less likely. Participants expressed the trust they have in their doctor or pharmacist

*“No I ask a lot but don't forget I (.) have a health background and I have an enormous respect towards the pharmacists I understand that their course is as long as that of a doctor and is more focused on medicines and so I take their opinion...” Kenneth*

He explains how the professional gets to know the individual through various stages of his/her life becoming “*the parishioner of the pharmacist*”. Kenneth

Lilly, also showed complete confidence in the pharmacist emphasising the importance of having a good rapport. She also declared this in the context of having more confidence in buying any product needed from a pharmacist rather than online. Others such as Chloe value the importance that different roles are not overpowered by that of the doctor.

*“I understand, no I understand that a pharmacist sometimes knows more about a compound than most doctors” (Chloe)*

Responses varied from lack of trust in doctors in a way that a second opinion is always sought to total trust in the doctor's prescription of treatment. Chloe gave clear signs of her mistrust in one doctor's advice and would practically always seek a second opinion.

*“when you pass from a certain trauma you will be young from negligence of doctors, you (.) I was brought up not to trust them, you are understanding?” Chloe*

### 3.10.4. Influence and consequences of restriction of supply

In Malta, medicines can be legally obtained either through the government health service through an entitlement system or from the private ‘brick-and-mortar’ pharmacy. Problems with supply exist in both sectors as described here below. Since the public healthcare system procures medicines on the ‘cheapest

compliant with specifications' principle, certain more advanced medications do not stand a chance of being procured within in the NHS.

*"Yes, ah but I don't qualify, the only time I qualified through a doctor and they were of a lesser quality (.) inhalers basically, I needed Oxis but they don't bring Oxis. They bring a lesser quality. So it didn't help me anyway (.) so (.)" Chloe*

Paulette described her elderly mum's situation who was prescribed an anticoagulant, warfarin on her discharge. She explained how the doctors told her that besides warfarin requiring regular blood tests, there also exists a more expensive anticoagulant that works in the same way but does not need the laborious monitoring. Although one's wage may be low, Paulette said that there was no thinking twice about it, but to buy the treatment.

Restricted options and lack of supply also exist in the private sector and experiences of the participants explain the context for having to pursue sources abroad (n=4/5). Kenneth needed to purchase particular vitamins that were recommended by a paediatrician for his daughter because these were not stocked in Malta while Paulette was always on the lookout for OTC medication from private pharmacies for migraine relief whenever she was abroad because options in Malta were not satisfactory.

Lilly explained that she regularly needs a supplement that is not available on the local market and depends on a friend to bring them over from abroad. Cost also came up as an obvious reason, for purchasing medicines, mainly OTCs, from pharmacies abroad such as pain relief patches.

#### 3.10.5. Influence of Cost

Dealing with the cost is different for different people. It depends on their financial status, their income and social background. Lilly confessed that her elderly parents do not qualify for any subsidised medicine although they are pensioners of a certain age. She does not speak about any concerns or complaints that they have about buying their medicines. Others, though they purchase medicines may be doing so despite the high cost of medication and despite the restraints on their budget. As Paulette explained,

*"... where health comes in, where health comes in, and when possible (.) you have to afford, you are going to get a little tight." Paulette*

On the other hand, Chloe reasoned that she would not "skinflint on health" and that she would rather trade certain luxuries (debatable necessities) such as doing her hair, so as to go for the best treatment she could get.

#### 3.10.6. Need for options

Further to the participant who expressed concern about constantly searching for products related to migraine when abroad, another expressed the opinion that more options are needed in that some barriers need to be removed to counteract the present situation that everything needs to be through a pharmacist.



*“there is more the need of tipo the source of a medicine should not always be the pharmacist  
I mean you can look somewhere else..... other natural remedies if they work well .....  
“cause there is a bit of a barrier” Winston*

#### 4. Discussion

This study concludes that consumers in Malta who need to buy POM medicines do so from the private pharmacies located around Malta and Gozo, yet a small percentage do purchase OTCs online. It gives some depth into medicines’ purchasing patterns. This was achieved because the design of the survey was such that it differentiated between the two categories as explained to the respondent in the questionnaire itself.

Non-prescription medicines and medicinal products are perceived differently. Participants in the present qualitative study expressed opinions that ‘medicines’ are considered to be those that are prescribed by the doctor. There was also the idea that since customers can buy a product easily over the counter such as paracetamol, then this is not considered as a ‘medicine’ and therefore as not having safety concerns as do POMs. Therefore, the level of caution is different between these two categories. This could explain why a few respondents, who, after reporting that they buy or bought OTCs online, answered both to reasons for purchasing as well as reasons for not purchasing online. Individuals may consider products for purchasing online because they have the idea that they are not medicines and therefore no safety concerns involved. This diversity in opinions about OTCs may open areas for research in Malta in the same way that other studies were conducted among different populations to understand perceptions about risk with OTCs<sup>40,41</sup> and to understand how consumers should be supported with regard to OTC medicines.

The NHS provides medicines that are the “cheapest compliant with specifications” offers submitted by economic operators yet such subsidized treatment may not be the most beneficial. This was expressed in the interviews where it was claimed that the government health service only entitles patients to a lesser quality of medicine and does not provide a vast choice of medicines in the event of inefficacy. Such instances point to the importance of patient involvement and feedback about the medicines they are supplied with. The involvement of patients’ organisations in research and development has become an area of current research. For example the European Patients’ Academy Forum (EUPATI) focuses on “education and training to increase the capacity and capability of patients to understand and contribute to medicines research and development and also improve the availability of objective, reliable, patient-friendly information for the public.”<sup>42</sup> Furthermore, self-empowerment is among one of the actions needed for policy generation as identified in the Health 2020 Strategy which in turn feeds Malta’s National Health System Strategy 2014-2020 (NHSS). Evidence shows that knowledge generates resilient communities and supportive environments.<sup>43</sup> Therefore the more knowledgeable individuals are the more involved they are about their health, the more compliant they will be and the better treatment outcome. In turn there is less burden on the healthcare system.

Safety was the main reason many respondents in this study gave for not purchasing medicines online. The cautious behaviour among the Maltese population is manifested in the claim that practically no respondents purchase POMs online together with the most common reasons selected of “do not think it is safe” and “do not want to risk buying medicines from the Internet which are POM in Malta.” Furthermore, many participants think that a problem can occur with purchasing a medicine online while others preferred not to give an opinion indicating their uncertainty about this possibility. The belief of safety was linked to the people’s trust primarily in their doctor. The trust or lack of trust in the healthcare provider may influence how patients go about deciding whether to get professional advice on treatment options or not. The Medical Board of Australia commissioned a piece of independent social research that found doctors as the most trusted profession in Australia, along with nurses and pharmacists. Confidence in doctors was instilled if they kept up to date, monitored treatment outcomes, communicate effectively, including explaining diagnoses in a way that the patient can understand.<sup>44</sup> In this study, prescription medicines prescribed by the doctor are in fact bought from local pharmacies in Malta. Therefore, it is obvious that what the doctor prescribes to the patient is not considered by the general public through other routes other than the local pharmacy in Malta. Consequently, the local pharmacist plays an important part in the patient’s treatment plan and outcome.

Safety might not mean necessarily that one should avoid Internet purchasing of medicines. Doctor’s opinions about internet purchasing of medicines was studied in another study claiming that 50% of responses from Maltese physicians were in favour of use of internet pharmacies if the source was reliable because of the very reasons that emerged in the current study, i.e. that of cheaper options, to solve availability issues locally, and to provide wider choices for the patients.<sup>26</sup> Others were not in agreement because patients will not get the advice they would get from a brick-and-mortar pharmacy.<sup>26</sup> As opposed to the general finding that emerged in the quantitative study, i.e. that people trust their doctor mostly for advice, there were also respondents in the qualitative interviews who prefer to get a second opinion to that of their doctor while others like to discuss treatment options at length with both their doctor and pharmacist. Therefore the patient also has a very important part in deciding about his or her treatment hence patient’s involvement.

Education has emerged as an important determinant that could contribute to the safe use of the Internet for the purpose of purchasing medicines. This was seen in the test of association done between education and the opinion of whether problems can happen with Internet purchasing of medicines. The group in the post-secondary education level who claimed it to be ‘unlikely’ (n=21) were three times more than those in the secondary level (n=5). These individuals further explained that they either “buy from a registered online pharmacy” or “trust the website” or just “don’t think there is a real problem.” Furthermore, a large number of respondents claimed that they might consider internet purchasing in the future, that they were not aware they could purchase online, that they do not know how and never thought about it. It is imperative to take these facts into consideration when planning education about such a practice for the population. On the other hand, the fact that the majority of individuals declared that they are aware of counterfeit medicines online is a further understanding that most people are aware of what is offered on the internet and therefore the message that needs to be conveyed is that education needs to be targeted

at different levels in an effective way. This in turn will be keep consumers alert and responsible for their decisions about access to quality and safe sourcing of medicines.

Unlike the current scenario, convenience is one of the most regularly communicated benefits reported by Fittler et al. However, convenience may mean different circumstances for different people. For example, Fittler et al. mention flexible access, comparable prices and lack of the personal touch as factors that define convenience as seen by patients. Mazer's study in Emergency Department patients in Pennsylvania reported 66% convenience as the highest reason followed by cost at 40%. In the current study only 3 participants chose the option of convenience as a reason for purchasing products (namely OTCs) from the Internet. Until now pharmacies in Malta do not deliver medicines on a door-to-door basis unless medicines need to be delivered through the 'Pharmacy Of Your Choice Scheme' (POYC) only to the elderly population who apply for the scheme. Therefore, anything bought from a pharmacy in Malta needs to be done so in person. Furthermore, legislation in Malta does not allow for internet pharmacies and restrictions were encountered when purchasing POMs from foreign websites as seen with the two participants who in this study claimed to have bought POMs in the past. Despite this, convenience in Malta lies in the very fact that the island is small and has an average of 3-4 pharmacies in each locality. There could remain the fact that the lack of personal communication in the pharmacy could be perceived as an inconvenient matter.

The consumer's perception of the pharmacist has been studied before in Malta and it was revealed that majority of patients would first consult the physician for health advice and rely solely on the community pharmacist's choice when purchasing a non-prescription medication or for minor ailments such as cough or constipation.<sup>26</sup> In this study, the doctor is considered to be the most trustworthy source of advice, however about half of the respondents deem pharmacists also as an important source. The pharmacist is therefore in an influential position to be able to give correct guidance. A pharmacist's input here would be beneficial especially with monitoring the OTC purchases, although somewhat difficult when the patient ventures alone to acquire OTCs. The patient's symptoms could be assessed in detail such as in the situation of migraine and the patient guided more adequately, maybe even suggesting specialised healthcare professionals who could give more support in line with latest evidence-based treatments.

#### 4.1. Limitations

Despite efforts to enhance response rate such as using a monetary incentive and personalized notes, the response rate was still generally low, although a satisfactory response for one attempt at questionnaire dissemination. This was a self-funded study and therefore funds were not sufficient to send reminders.

Some respondents were not always clear in their responses and therefore one needs to consider health literacy issues. Some of the respondents who claimed that they purchased a POM or OTC online also gave reasons for not purchasing medicines online. This could either be because of confusion in the categorisation of medicines as POM or OTC or they may have misread or ignored the wording of the question.

Participants who reply to questionnaires undergo a sequence of cognitive processes. These include, understanding the intent of the question, memory searching for the answer, making a judgment about the adequacy of the memory recalled and finally integrating the whole process into a response. The process may be complex and each of the steps mentioned have their subdivision of their own processes.<sup>45</sup> Therefore there is a cumulative effort needed on the part of the participant to be able to answer substantial lengthy questionnaires. This needs to be considered in addition to other factors that motivate people to completing questionnaires such as desire to contribute to research, altruism and opportunities for self-expression.

Ensuring uniform understanding of questions in a self-completion questionnaire has been referred to in other studies such as that of Pflieger et al. In their study, about pharmaceutical public health, uniform interpretation was a concern although respondents were health professionals, i.e. pharmacists. The authors concluded that in such types of research, methodologies may be chosen to allow for "*further explanation of terms and concepts which respondents find difficult to understand*."<sup>46</sup> 'Questerviews' for example may provide a standard set of questions that act as a trigger for in-depth responses during interviews and these are audio-taped.<sup>47</sup> Such an approach could also address the health literacy issue that may be a concern among individuals especially because of the very limitations mentioned in other studies where categorisation of medicines was not done because respondents find it difficult to distinguish between POM or OTC.

## 5. Conclusion

Maltese patients obtain medicines prescribed by their doctor from the 'brick-and-mortar' pharmacy yet some obtain OTCs through the internet. In general, this establishes the pharmacist as having a vital role within the patient's treatment plan and outcome. The recommendations from the current study focuses mainly on educating the customers that may be contemplating the use of the Internet for purchasing their medicines. Education programme plans together with the pharmacist's daily role with educating the customer more directly, are ways that 'create resilient communities and supportive communities'<sup>43</sup> with the aim of inspiring self-empowerment.

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