Attitudes and Beliefs of Patients about Community Pharmacy Services

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Dedication

I believe in the presence of Universal forces that work in the best interest of humanity. It is this belief which has encouraged me to endeavour my studies and discover more about life. I am secure in my knowledge that the trust in these forces has been inherited from my loving parents who in turn have been blessed by receiving them from past ancestors. These forces, present within each person's psyche, are strengthened as they are transmitted from one person to the other.

I believe that they have been and remain responsible for the development and the evolution of Humanity thanks to so many people; but especially through authentic scientists who have decided to dedicate their energies, and sometimes also suffered to witness this development and evolution as it strives to move from one level of awareness to a higher one.

I dedicate this thesis to these forces. Their name is not so much important. What is definitely of value is their presence and I must admit that I am and will always remain mesmerized by the never-ending discovery of the work of these forces.

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Abstract

Increased knowledge and understanding about attitudes and beliefs about community pharmacy services amongst people living in Malta support pharmaceutical policy and the profession to update pharmaceutical services according to needs and expectations of society. At the individual patient level, understanding attitudes and beliefs about community pharmacy services may help improve pharmacists' interventions directed towards patient outcomes.

There were two aims for this study. The first one was to assess the attitudes and beliefs of people living in Malta about community pharmacy services. The second one was to assess the influence of attitudes and beliefs of people about community pharmacy services on four outcomes: utilization of pharmaceutical services, clinical outcomes brought about as a result of pharmacist over the counter (OTC) recommendations, health and adherence to medication.

The prospective cohort study consisted of two interviews. For the first interview, performed as a telephone survey, telephone numbers were identified by simple random sampling and 1,126 people accepted to take part in this study. For the second interview 206 people were interviewed from pharmacies and from local councils both chosen by stratified random sampling. The surveys assessed the persons' demographics, the persons' overall attitudes and beliefs about community pharmacy services as well as possible reasons for such attitudes and beliefs. The second interview also assessed the general health, clinical outcomes brought about by pharmacists' OTC recommendations and adherence to medication protocol. Comparative analysis between more positive attitudes and beliefs and outcomes was carried out.

The data retrieved showed that overall the attitudes and beliefs of the people residing in Malta about community pharmacy services are positive. In fact 91.06% of respondents to the telephone questionnaire stated that they believe and trust that the pharmacist is an important healthcare provider for their general health concerns while in the second questionnaire 95.15% said that they have positive attitudes and beliefs about community pharmacy services. Overall people in Malta tend to make use of pharmaceutical services regularly. In fact 89.61% of respondents to the telephone questionnaire and 88.83% respondents of the second questionnaire stated that they use the pharmaceutical services regularly. People`s results following pharmacists` OTC recommendations are positive (92.54%). When carrying out the comparative analysis between attitudes and beliefs and outcomes it was noted that there was a statistically significant association between more positive attitudes and beliefs about community pharmacy services and a higher utilization of pharmaceutical services (p value = 0.000 for both the telephone survey as well as the pharmacy/local council survey). There was a statistically significant association between more belief in the pharmacist and more positive results with OTC recommendations (p value = 0.000), and more belief in the pharmacist and adherence to medication (p value = 0.001). There was no statistically significant association between more positive attitudes and beliefs and health (p value >0.05).

People living in Malta have positive attitudes and beliefs about community pharmacy services and make use of such pharmaceutical services regularly. There is a statistically significant association between more positive attitudes and beliefs towards community pharmacy services or belief in the pharmacist`s help to

achieve better clinical outcomes and a number of outcomes. These are more utilisation of pharmaceutical services, more positive outcomes as a result of OTC recommendations and more adherence to medication. These encouraging positive results continue to demonstrate the importance of community pharmacists' services in the citizens' daily healthcare. The results reaffirm that attitudes and beliefs do have a strong effect on outcomes.

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Chapter 1

Introduction

Preamble

The World Health Organization, Constitution envisages "…the highest attainable standard of health as a fundamental right of human being" (WHO, 2017[1]). For centuries man has been intrigued by deep curiosity, desire and interest to obtain more information about factors which contribute to better healthcare and clinical outcomes. The thirst for more knowledge about what factors affect outcomes and ways to improve clinical outcomes lies at the heart of all studies related to medicine. Community pharmacy services are amongst the health services which are mostly available to the public and are amongst the health services which might impact patient behaviour and important outcomes. The purpose of this chapter is to highlight the various roles undertaken by the pharmacists and how they are viewed by the public. The information shows how pharmacists are in an ideal position to help provide the best healthcare possible. Various findings which suggest what roles attitudes and beliefs towards a particular medication or health service may play in order to provide better clinical outcomes and thus providing better health are also emphasized. Finally, the purposes of carrying out this research are discussed.

[1] World Health Organisation (WHO). Human Rights and Health [Internet]. Geneva: WHO; 2017 [cited 2019 Jan 19] available from URL: https://www.who.int/news-room/fact-sheets/detail/human-rights-and-health.

1.1 The significance of good healthcare

The WHO (2020) defines health as "a state of complete physical, mental and social well-being, not merely the absence of infirmity or disease[2]". This definition includes the fact that achieving the best standards of health is a fundamental right of every human being. It helps to include also behavioural, environmental and psychosocial considerations since it is focused on the need to achieve well-being for the individual (Badash *et al*, 2017). Health should not be just the responsibility of the Health Sector but each individual should also take responsibility for one`s own health. Placing a high value on health would involve having every individual carry out all the necessary actions to enhance one`s own health. Such actions would include preventative action as well as taking any treatments necessary. Practicing such actions would become "a normal expression of the need to behave in harmony with one's own and one's community values" (Sartorius, 2006).

Various countries worldwide continue to regard health as extremely vital for the country. Health is not only important for the general well-being of the population but also attributes to other important factors for the nation. In the Maltese National Health Systems Strategy, 2014, Mr Chris Fearne[3], Maltese Minister for Health, stated that the Maltese Government regards the quality of health as very important and describes it as "our health workforce".

He stated that it is important to continue to help healthcare to attain maximum potential

[2] World Health Organisation (WHO). WHO remains firmly committed to the principles set out in the preamble to the Constitution [Internet]. Geneva: WHO; 2020 [cited 2020 Jan 2] available from URL: https://www.who.int/about/who-we-are/constitution.

[3] Fearne C. Foreward – Working towards safe and sustainable health systems for all. A National Health Systems Strategy for Malta 2014 – 2020 [Internet]. Malta: Parliamentary Secretary for Health; 2014 [cited 2020 Jan 10] available from URL: https://deputyprimeminister.gov.mt/en/Documents/National-Health-Strategies/NHSS- EN.pdf.

by providing access to further research as this will help with the healthcare of the people living in Malta.

1.2 The roles of community pharmacists in healthcare

If one had to reflect on descriptions of community pharmacists found across the literature as how they contribute to this healthcare worker, there is a plenitude of such statements emphasising the accessible frontline action. "Community pharmacists work at the frontline of healthcare" (Kokane and Avhad, 2016). They play a number of roles in healthcare. The pharmacist can be described as a "mediator, protector, or advocate all rich metaphors that offer promising alternatives to describe the complex nature of the patient-pharmacist relationship" (Haddad, 2018). The WHO describes the community pharmacists as the health professionals most accessible to the public and it also states that community pharmacists are a cornerstone of primary healthcare (WHO, 2019[4]).

Pharmacists facilitate patient access to medicines through dispensing. They tend to be highly respected by the communities they serve, taking decisions involving medicines, advice and reviews (Egorova *et al,* 2015; Jaiprakash *et al,* 2016; Kokane and Avhad, 2016; Salim *et al,* 2016; International Pharmaceutical Federation, 2018[5]). Roles of the pharmacists in community pharmacies are also changing from traditional dispensing roles

[4] World Health Organisation (WHO). The legal and regulatory framework for community pharmacies in the WHO European Region [Internet]. Geneva: WHO; 2019 [cited 2020 Jan 2] available from URL: https://apps.who.int/medicinedocs/documents/s23795en/s23795en.pdf.

[5] International Pharmaceutical Federation. Use of medicines by the elderly. The role of pharmacy in promoting adherence [Internet]. The Hague: International Pharmaceutical Federation; 2018 [cited 2020 Jan 12] available from URL: https://www.fip.org/www/streamfile.php?filename=fip/publications/Use_of_medicines_by_the_elderly_The_role_of_pharmacy_in_promoting_adherence.pdf.

to much broader roles (Bishop *et al,* 2015; Koehler and Brown, 2017). In a recent study carried out locally it was confirmed that Maltese patients are very interested in the community pharmacist extended professional services such as blood pressure measurement and patient monitoring (Vella *et al,* 2015).

The pharmacists` impact to help with other issues has also been frequently reported. Pharmacists are also regarded as health promoters. Pharmacists are involved in a wide range of extended community pharmacy services in various countries worldwide (Hassali *et al,* 2018). Such extended health services include immunization (McConeghy *et al,* 2016; McConeghy and Wing, 2016; Trotta *et al,* 2017; American Pharmacists Association, 2018[6]; Hurley-Kim *et al,* 2018;), treating minor ailments, promoting healthy lifestyle and smoking cessation support (Brown *et al,* 2016; Peletidi *et al,* 2016). Community pharmacy services have also been linked to help bring about various benefits in the people`s life including quality of life (Felix *et al*, 2017).

Pharmacists also play an important role in the multidisciplinary healthcare team. They partner up with other professionals who work in healthcare (Mossialos *et al,* 2015; Ismail *et al,* 2018). Such partnering and collaboration have been found to have positive impacts. Studies carried out to show the benefits of such collaboration include a systematic review and meta-analysis of the impact of collaborative practice between community pharmacist and general practitioner on asthma management (Mubarak *et al,* 2019). In some countries

[6] American Pharmacists Association. (APhA) APhA honors 2018 Immunization Champions [Internet]. Washington: APhA; 2018 [cited 2020 Jan 20] available from URL: https://www.pharmacist.com/article/apha-honors-2018-immunization-champions.

pharmacists have also been granted prescribing authorities and this has been consistently reported to be helpful to reduce the amount of time to receive treatment (Yap, 2018[7]).

There are various extended professional services, roles and programmes which are helping to continue to evolve community pharmacy services. One such programme is the Medication Therapy Management programme (MTM) in the US. According to the American Pharmacists Association (2020)[8], the MTM programme is intended to help members improve their medication therapy to get the best possible benefits. This is done by the pharmacists who work to identify, prevent and resolve problems related to medications. This way pharmacists are able to help patients achieve better overall health and manage better their chronic conditions. MTM is carried out in a standardised format including annual comprehensive medication reviews and quarterly follow-ups.

The MTM programme is beneficial and its goal is to improve outcomes (Taylor, 2018; Joint Commissioner of Pharmacy Practitioners, 2018[9]). An example is a study carried out in the US as part of the MTM services. In this study pharmacists were found to help achieve an improvement in the HbA1c in patients suffering from Type 2 diabetes mellitus (Ndefo, 2017). According to the American Pharmacist Association (2018)[8] a lot of people can benefit from this MTM service including those who have been hospitalized, those

[7] Yap D .Idaho Pharmacists can Prescribe more than 20 Categories of Medications. Pharmacy Today. American Pharmacists Association; 2018[Internet]. Washington: [cited 2020 Feb 2]; Available from URL :https:// www.pharmacytoday.org/article/S1042-0991(18)31417-8/pdf.

[8] American Pharmacists Association (APhA). Medication Therapy Management (MTM) [Internet]. Washingtom: APhA; 2020 [cited 2020 Jan 2] available from URL: https://www.pharmacist.com/medication-therapy-management-services.

[9] Joint commissioner of Pharmacy Practitioners (JCPP), Medication Management Services (MMS) Definition and Key Points [Internet].USA: JCPP; 2018 [cited 2020 Feb 27] available from URL: https://jcpp.net/wp-content/uploads/2018/05/ Medication-Management-Services-Definition-and-Key-Points-Version-1.pdf.

who suffer from several health conditions and those who have problems or have questions regarding their medications. Another role being undertaken by pharmacists is that of the community-based pharmacist practitioner. In the US pharmacists are taking this role which is based on four tenants. These are direct patient care, team-based care delivery, patient care services management and leadership for advancing patient care (Erickson, 2016).

1.3 Attitudes and beliefs of patients towards community pharmacy services

Various studies carried out in a number of different countries have shown that overall people trust the pharmacist, have positive attitudes and beliefs towards services provided by community pharmacies and are interested in expanded pharmacist services. They also show that people are overall satisfied by such services (Anderson *et al*, 2004; Wirth *et al*, 2011; Kelly *et al*, 2014; Hefny Mohamed, 2018; Hindi *et al*, 2018).

In a study carried out in Malta, for example, it was noted that the majority of the people were very or fairly satisfied with various characteristics exhibited by the pharmacist (Wirth *et al*, 2011). In another study carried out in Malta which was intended to study public perception and expectations of pharmacy services, a high rating was given to pharmacist accessibility and support of patients to achieve the best outcomes and to the services carried out to ensure patient safety in medicine use (Hefny Mohamed, 2018). A study carried out in Newfoundland and Labrador showed that most people trust the pharmacist and have a good understanding of the work carried out by pharmacists (Kelly *et al*, 2014). A systematic review intended to study patient and public perspectives of community pharmacists in the United Kingdom, showed that overall people and patients

deem the pharmaceutical services as beneficial (Hindi *et al*, 2018). Another study carried out in Portugal revealed that the Portuguese people have positive attitudes towards their community pharmacy services, are highly satisfied and also expressed a positive evaluation regarding pharmaceutical services (Policarpo *et al*, 2019). A study carried out by The British Veterinary Association (2015)[10] revealed that people claimed they were 97 percent satisfied by the pharmacists.

1.4 Trust in pharmacists

Pharmacists are consistently being ranked amongst the most trusted professionals. According to a study commissioned by the pharmaceutical firm Sanofi in England, 65% of people said that they choose to visit a pharmacist rather than a general practitioner for advice on minor health problems which can be self-treated, at least some of the time (Clews, 2019[11]).

According to a national survey of Canadian people regarding their perceptions and attitudes towards pharmacists it was found that the majority of people trust pharmacists to carry out a range of roles (Abacus Data, 2015[12]). The study carried out by The British

[10] The British Veterinary Association (BVA) and the Royal College of Veterinary Surgeons (RCVS). Vet Futures. Public Trust in the veterinary profession. [Internet]. London: BVA and RCVS; 2015. [cited 2019 Jan 15]. Available from URL: http:// vetfutures.org.uk/download/surveys-filebase/Public_trust_in_the_professions.pdf.

[11] Clews G. Two-thirds of people will visit pharmacist for advice rather than GP.[Internet]. London: The Pharmaceutical Journal; 2018 [cited 2019 Jan 13]. Available from URL: https://www.pharmaceutical-journal.com/news-and-analysis/ news-in-brief/two-thirds-of-people-will-visit-pharmacist-for-advice-rather-than-gp/20205149.article.

[12] Abacus Data. Pharmacists in Canada A national survey of Canadians on their perceptions and attitudes towards pharmacists in Canada Report #2 2015 [Internet]. Canada: Abacus Data 2015. [cited 2020 Feb 1]. Available from URL: http://www.pharmacists.ca/cpha-ca/assets/File/news-events/PAM2015-Poll2.pdf.

Veterinary Association (2015)[10] also showed that pharmacists were ranked amongst the most trusted professionals (97 percent).

1.5 Accessibility of pharmaceutical services

The WHO describes the community pharmacists as "the health professionals most accessible to the public" (WHO, 2019[13]). One of the advantages that community pharmacy services have over other healthcare services is the good access one has to them (Bazawir, 2004). In a study carried out by Kelly *et al* (2014) it was found that most people use the pharmacy frequently. According to the Pharmaceutical Services Negotiating Committee (2020)[14] everyday about 1.6 million people visit the pharmacy in England. In a study carried out in Canada it was noted that over half of respondents stated that they visited the pharmacy at least once a month (Abacus Data, 2015[12]). In Ireland, the pharmacy usage and attitudes survey showed that 81% of respondents visited the pharmacy in the last month (Irish Pharmacy Union, 2019[15]). In a recent local study it was reported that 52% of patients stated that they visit the pharmacy two to three times a month or more while 48% said that they visit the pharmacy once a month or less (Wirth *et al*, 2011).

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[13] World Health Organisation (WHO). The legal and regulatory framework for community pharmacies in the WHO European Region [Internet]. Geneva: WHO; 2019 [cited 2020 Jan 7] available from URL: https://www.who.int/about/ who-we-are/constitutionhttps://apps.who.int/medicinedocs/documents/s23795en/s23795en.pdf.

[14] Pharmaceutical Services Negotiating Committee (PSNC). Essential facts, stats and quotes relating to pharmacy and pharmacy professionals [Internet]. London: PSNC; 2020 [cited 2020 Feb 3]available from URL: https://psnc.org.uk/ services-commissioning/essential-facts-stats-and-quotes-relating-to-pharmacy-and-pharmacy-professionals/.

[15] Irish Pharmacy Union. Pharmacy Usage and attitudes Survey Pharmacy Index 2019 [internet]. Dublin: Irish Pharmacy Union; 2019 [cited 2020 Jan 14] available from URL: https://ipu.ie/wp-content/uploads/2019/06/Pharmacy-Usage-and-Attitudes-Survey-IPU-BA-2019.pdf.

1.6 The link between attitudes and beliefs and clinical outcomes

Various studies have shown that there are factors other than the pharmacological action of a drug which help to bring about improved outcomes including clinical outcomes. Such factors include attitudes and beliefs. The effect of attitudes and beliefs towards a particular healthcare service or medication on outcomes is one that has been known for years.

A number of studies have shown a possible positive relationship between positive attitudes or beliefs about a particular health service, illness or medication and a more positive patient outcome (Mondloch *et al,* 2001; Dasgupta *et al,* 2014; Ellis *et al,* 2015; Graham *et al,* 2015; Jacob *et al,* 2015; Vedhara *et al,* 2016; Rief *et al*, 2017). "The overall effect of a drug stems from its pharmacodynamic actions plus the psychological effect derived from the act of its administration" (Chavarria *et al,* 2017). The healthcare provider`s performance, warmth and interaction with patient may bring about therapeutic effects and are also correlated with placebo effects and nocebo effects (Frisaldi *et al,* 2015; Czerniak *et al,* 2016; Blasini *et al,* 2017; Corsi and Colloca, 2017; Howe *et al,* 2017; Stub *et al,* 2017).

In a study carried out by Corsi and Colloca (2017), to study the effect of psychological factors and expectations on pain it was found that the expectations were highly correlated with placebo and nocebo effects.

The way clinicians interact with their patients also helps improve the effect of pharmaceuticals (Kaptchuk *et al,* 2015). "The doctor-patient relationship is a powerful part of a doctor's visit and can alter health outcomes for patients" (Chipdiza *et al,* 2015). Human interaction is also very important and cannot be replaced by technology. According to Singh (2018) although tele-medicine provided by the digital world is very helpful there is something which is very unique with personal interaction. And this is exactly what makes community pharmacists a unique healthcare professional, available and accessible to provide the non-pharmacological interaction within the patient care domain.

In a study carried out to investigate how the patient`s expectations predicts knee arthroplasty outcomes it was found that patients who expected a more positive outcome were more likely to have a more positive outcome following surgery (Filbay *et al,* 2018). In another study which was a systematic review to investigate the potential associations between clinical status and patient expectations of joint arthroplasty procedures and pre- and post-operative clinical status it was noted that there was a consistent association between greater expectations and better postsurgical clinical outcomes (Dyck *et al,* 2014). Nocebo effects have also been reported. This happens when patients experience side effects or negative outcomes due to anticipation of such side effect or outcomes. Hansen and Zech (2019), write about nocebo effects and negative suggestions in daily clinical practice. They describe ways how health professionals may bring about various forms of such nocebo effects and negative suggestions. They also explain the impact and approaches which should be carried out by health professionals in order to avoid such nocebo effects and negative suggestions and thus clinical outcomes precipitated by them.

Though there may not be any documented evidence how much community pharmacists assert the placebo and nocebo effects, they are providing the service to patients to support them in managing health issues. This community pharmacist intervention may be regarded as a tool. This tool is important to help to bring about better clinical practices and experiences for the patients (Chamsi-Pasha *et al*, 2017).

1.6.1 Relationship between attitudes and beliefs towards community pharmacy services and utilization of these services

There is a direct relationship between the degree of trust in a particular health service and utilization of such a service. For example, in a survey carried out in Canada it was noted that there was such a relationship between trust in community pharmacy services and utilization of such services (Abacus Data, 2015[12]).

In a study in Ghana it was noted that trust in the pharmacist was one of the key factors that influence the use of pharmacy services in general. The relationship of the patient with the pharmacist and staff was also found to affect the choice of a specific pharmacy (Okai *et al*, 2019).

1.7 The pharmacists' role in supporting adherence to medication

Adherence to medication protocol is a primary determinant which helps to bring about a successful treatment. The WHO, 2003 states that "Poor adherence attenuates optimum

clinical benefits and therefore reduces the overall effectiveness of health systems.[16]"

Poor adherence to medication "is a key hindrance in combating the challenges of public health in both developed and developing countries" (Lam and Fresco, 2015). Poor medication adherence also affects clinical and economic outcomes (International Pharmaceutical Federation, 2018[17]).

The fact that pharmacists are amongst the health professionals most accessible to the public places them in an ideal position to help patients to achieve improved use of medication. This fact has been demonstrated a number of times. For example, in a randomised controlled study in Riyadh, the capital city of Saudi Arabia to investigate the impact of pharmacist intervention on adherence and measurable patient outcomes among depressed patients it was found that the pharmacist intervention brought about a number of positive effects including adherence to medication (Aljumah *et al*, 2015). A study carried out to investigate the implementation and evaluation of a pharmacist-led hypertension management service in primary care showed that the pharmacist intervention helped with a number of outcomes including adherence to medication (Bajorek *et al*, 2016).

Another study carried out to investigate the impact of pharmacist-led medication therapy management on medication adherence in patients with type 2 diabetes mellitus found that

[16] World Health Organisation (WHO). Adherence to Long-term therapies: Evidence for action 2020 [internet]. Geneva: WHO; 2020 [cited 2020 Jan 16] available from URL: https://www.who.int/chp/knowledge/publications/adherence_report/en/.

[17] International Pharmaceutical Federation (FIP). Use of medicines by the elderly. The role of pharmacy in promoting adherence [Internet]. The Hague: FIP; 2018 [cited 2020 Jan 11] available from URL: https://www.fip.org/www/streamfile.php?filename=fip/publications/Use_of_medicines_by_the_elderly_The_role_of_pharmacy_in_promoting_adherence.pdf.

such medication therapy management could bring about an improvement in medication adherence and also could reduce the number of hospitalizations in the patients (Erku *et al,* 2017).

1.8 Research questions and aims of the study

The first research question of this study was: "what are the people`s attitudes and beliefs about community pharmacy services in Malta?" Up to this day there were only a small number of studies which had been carried out in Malta, but they did not represent a good random sample of the population. This information could demonstrate how much the services are appreciated and regarded as positive. If they are positive the probability would be that the patients would make more use of these services and the benefits provided by such services more. If this would be the case, further ways to improve and evolve such services would continue to enhance the benefits provided to the patients.

Information on attitudes and beliefs about community pharmacy services in Malta prior to research

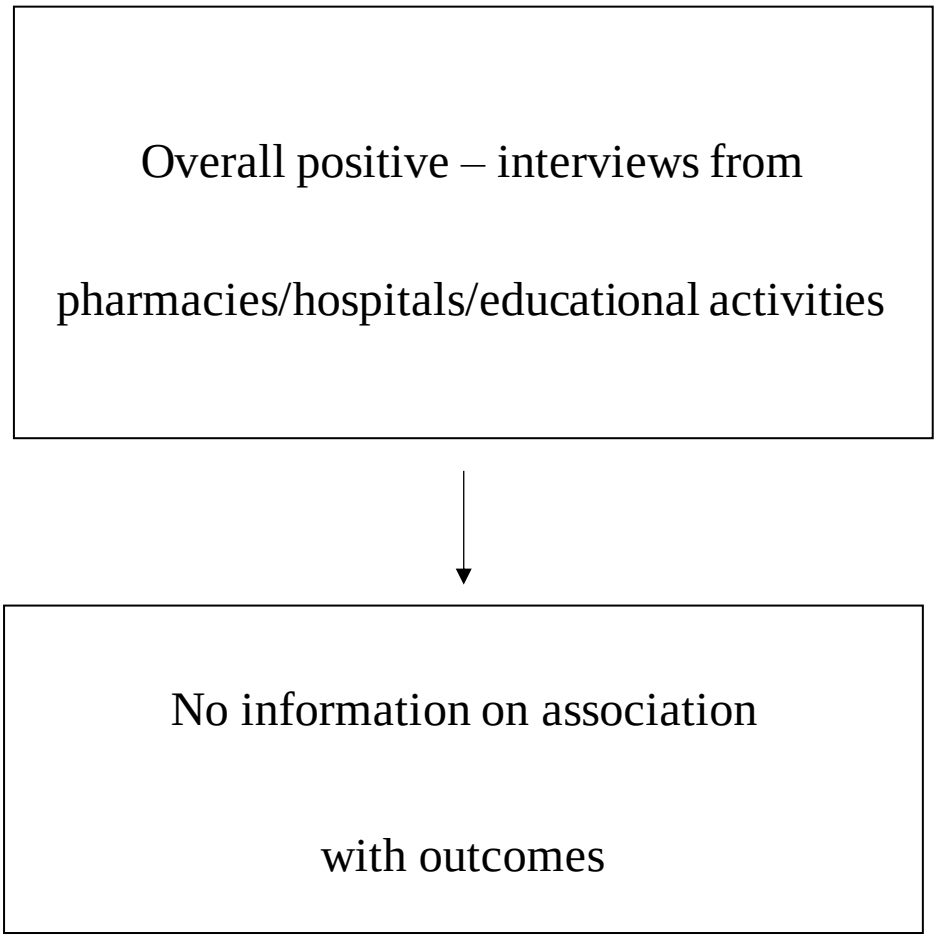

Figure 1.1: Information about attitudes and beliefs of patients about community pharmacy services in Malta prior to research.

Attitudes and beliefs about a particular health service or medication may have an effect on patient`s behaviour, and clinical outcomes.

The second question of this study was:

"Do the patient`s attitudes and beliefs about community pharmacy services affect how much the patient utilizes such services and do they affect the patient`s actions and the clinical outcomes brought about by the patient`s such attitudes, beliefs and actions? Do they also affect the patient`s adherence to medication?"

The aims of the study were:

i. To assess the attitudes and beliefs of people in Malta about community pharmacy services.
ii. To assess the influence of attitudes and beliefs of people in Malta about community pharmacy services on four basic outcomes: Utilization of these services, clinical outcomes brought about following pharmacist OTC recommendations, health and adherence to medication.

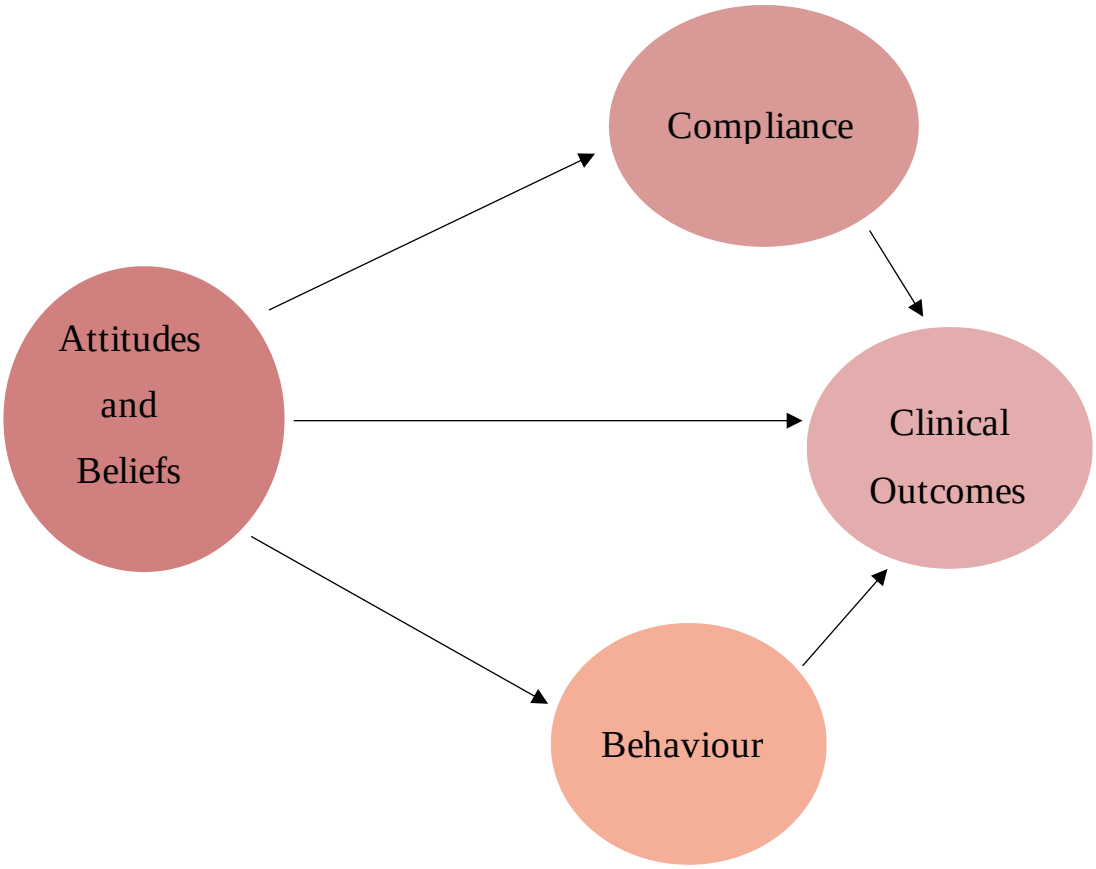

Figure 1.2: Hypothesis: The hypothesis for this study was that attitudes and beliefs of patients about community pharmacy services affect behaviour and compliance. Attitudes and beliefs, compliance and behaviour have an effect on clinical outcomes.

It is hypothesized that attitudes and beliefs of patients towards community pharmacy services have an effect on compliance and behaviour. These three factors which are attitudes and beliefs, compliance and behaviour on the other hand bring about an effect on clinical outcomes including increased utilization of pharmaceutical services (Figure 1.2). If this hypothesis is proven to be correct then more work should be carried out in order to improve such attitudes and beliefs in order to provide better services and outcomes.

1.9 Rationale for this research

This chapter demonstrated how community pharmacy services play a significant role in the people`s day to day healthcare. Community pharmacists are contributing to various roles in community and this chapter demonstrated how these may impact the person`s well-being and use of medicines. It also showed how various other factors apart from the pharmacological action of a drug might impact clinical outcomes. This research is intended to achieve more information about how people perceive health services offered by community pharmacists and how factors arising from these services might affect clinical outcomes. Such results help to contribute to further knowledge in order to continue to constantly improve and evolve more factors to provide better healthcare.

Chapter 2

Methodology

Having specified the objectives for this study, the components which needed to be studied were figured out and established. This chapter outlines how these components were decided. It also gives a description of the research design, the tools utilized and the methodology followed as well as the reasons for using such research design, tools and methodology.

2.1 Research design

It was decided to carry out a prospective cohort study. This was carried out from August 2019 to January 2020. Inclusion criteria included people staying in Malta above 18 years of age. A flowchart of the methodology followed is presented in Figure 2.1. The research design was comprised of two parts – a telephone survey and an interview.

2.1.1 The telephone survey

This survey was carried out in order to obtain a sound representative sample of the people living in Malta. The studies carried up to now might not have obtained a random sample of all the people living in Malta. To ensure having such a good representation of the people it was decided to carry out a telephone survey by including all possible mobile numbers available in Malta.

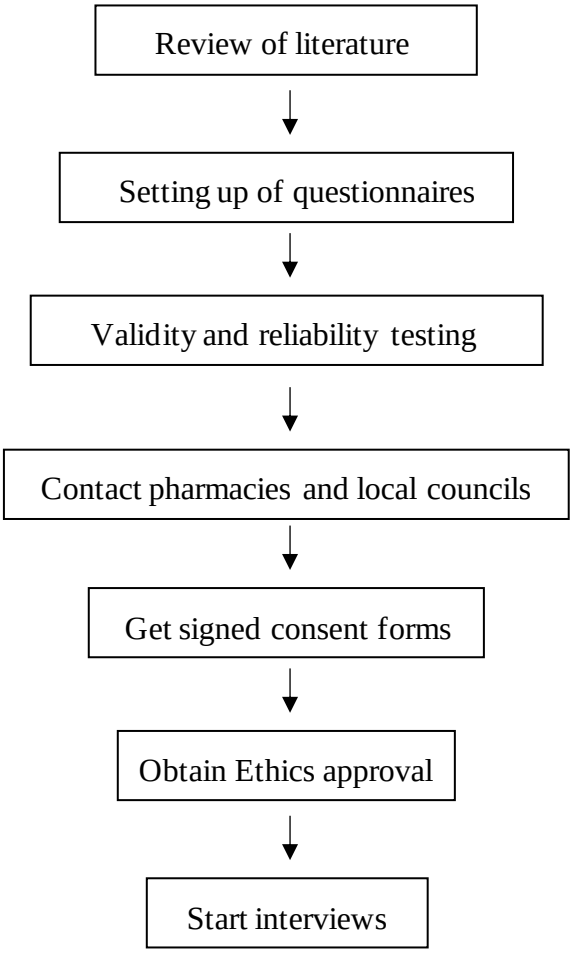

Figure 2.1: The steps followed before starting the interviews.

In order to achieve the best random sample possible of the people living in Malta, it was decided to call on the mobile phones rather than on fixed line phones since most people own a mobile phone and are not all the time at home. This could provide a more random sample of the population living locally.

Figure 2.2 shows how the selection of the mobile numbers was carried out. For this study 1,126 people were interviewed. In order to select the mobile numbers randomly, the simple random sampling method was used using Excel by starting with the number 79 for GO mobile phones 99 for Vodaphone mobiles and 77 for Melita mobiles. To invite the 1,126 willing participants to answer the first 12,758 identified numbers were dialled. Out of these, 11,632 numbers either did not exist, did not answer or did not want to participate in the survey. The remaining 1,126 people agreed to answer the questionnaire.

The number of people who answered was a good representative sample of the people living in Malta, thus the results obtained could provide a reliable sample. The problem with this method was that it involved a lot of time being wasted when dialling numbers which do not exist or calling people who would not want to answer. To make up for this problem it was decided to involve 3 more people who were trained to help with the telephone questionnaire.

This survey provided an answer to the first research question which was to assess the people`s attitudes and beliefs towards community pharmacy services. It could also help to study the association between more positive attitudes and beliefs towards community pharmacy services and utilization of such services. The limitation with the telephone survey however was that it could not include more details because of two major reasons. One reason was that if the survey would be too long it would be virtually impossible to

get such a large number of people to agree to answer a long questionnaire, secondly the ethics could refuse to allow the use of personal information related to health over the telephone. In this case no consent form could be signed.

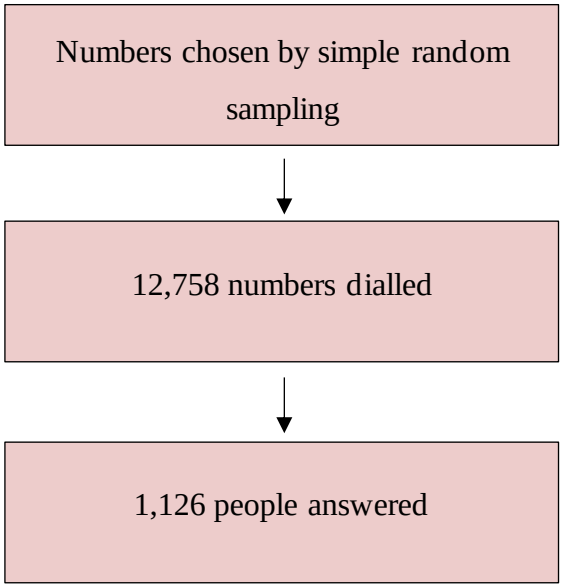

Figure2.2. The telephone survey. The figure shows the process undertaken in order to obtain a reliable random sample of 1,126 people answering the telephone questionnaire. The first 12,758 numbers were dialled and 1,126 people accepted to take part in the study.

2.1.2 The community pharmacy/local council survey

In the second part of the study the intention was to interview at least 200 people. Figure 2.3 outlines how the selection of people to be interviewed was carried out. To obtain a stratified random sample Malta was split into 5 different regions as indicated by the Maltese National Statistics Office. One pharmacy and one local council were chosen from each of the 5 different regions. A number of pharmacists working across Malta and a number of local councillors were contacted. This was carried out in order to obtain the permission of 1 local council 1 community pharmacy from each of the 5 regions.

The consent form was distributed to each of the pharmacist or local councillor who agreed to allow such studies to take place. The initial intention before starting the interview was to interview at least 20 people from each of the 5 different pharmacies and 20 people from each of the 5 different local councils chosen. It was planned to interview at least a total of 200 people.

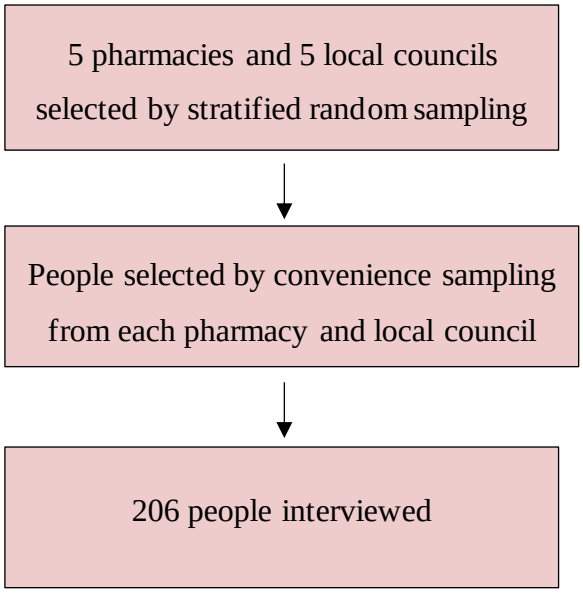

Figure 2.3: The pharmacy/local council survey. This shows the process undertaken in order to obtain a stratified random sample of 206 people answering the pharmacy/local council questionnaire. The 5 pharmacies and 5 local councils were selected by stratified random sample and the people were interviewed from these pharmacies and local councils.

2.2 Tool setting

A review of questions involved in studying attitudes and beliefs about pharmacists as well as other healthcare professionals was carried out in order to get a general idea of such studies. Questionnaires were purposely developed for this study.

2.2.1 The telephone questionnaire

Figure 2.4 outlines the questionnaire for the telephone survey (Appendix 2). The first part of the questionnaire consisted of questions regarding the person`s general demographics. These included the gender, age and level of education. Only people over 18 years of age were allowed to participate in this study. The intention to ask about the demographics was not just to get more information about the people interviewed but also to check if attitudes and beliefs of people about community pharmacy services and utilization of such services were related to demographics. The second part of the questionnaire involved asking the people about the following three main issues related to pharmaceutical services:

i. Their belief and trust that the pharmacist can help them with minor health problems.
ii. Their belief and trust that the pharmacist is an important healthcare provider for their health concerns.
iii. How much they make use of the pharmaceutical services offered by the pharmacist for minor ailments, over the counter (OTC) medications, health advice and guidance for general medication use.

Finally the possible reason for giving such answers was also asked. In each case a 5-point Likert Scale was used to answer. The purpose of using these three questions was to

cover a spectrum related to attitudes, beliefs and use of pharmaceutical services as wide as possible in a short time. The function of the first two questions was to cover the study of attitudes and beliefs related to the pharmacist`s help and the role of the pharmacist as a healthcare provider for their health concerns. The last question was a direct question asking how frequently people make use of pharmaceutical services regularly.

This survey, therefore was a tool to help reach the first objective of this study. It acted as a tool to contribute to the second objective since the association between attitudes and beliefs towards community pharmacy services and utilization of community pharmacy services could also be studied by using this survey.

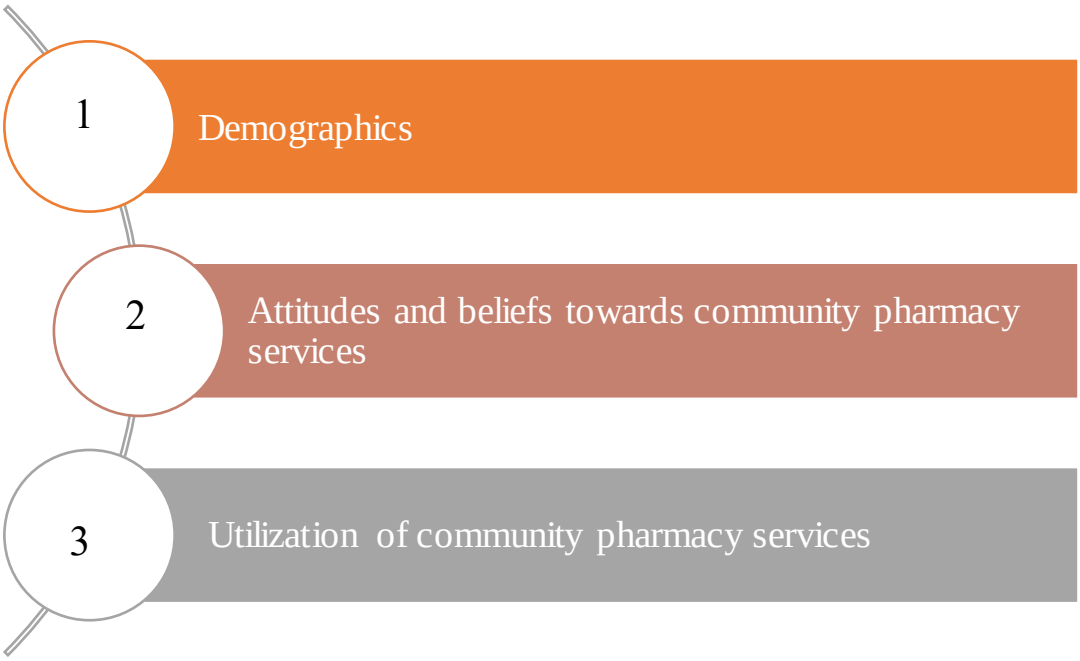

Figure 2.4: The telephone questionnaire. This was divided into 3 sections. The first part asked about the person's demographics, the second part asked 2 questions related to attitudes and beliefs towards community pharmacy services and the third part asked about utilization of pharmaceutical services.

2.2.2 The pharmacy/local council questionnaire

A second questionnaire was prepared in order to reach the other aims and objectives of the study (Figure 2.5). The intention for the questionnaire was to be implemented in the community pharmacy and local council settings. Questions related to attitudes and beliefs of people and how these are associated with overall health and medication use patterns, were included. The first part of this questionnaire captured the person`s demographics (gender, age and level of education).

For the second part of the questionnaire the people were asked about the following:

i. Their belief regarding the pharmacist`s knowledge on health and health problems in general.
ii. Their belief about whether the pharmacist is an expert in medicines.
iii. How much they have had positive experiences with community pharmacy services.
iv. Their overall attitudes and beliefs about community pharmacy services.
v. How much they follow the pharmacist`s advice for their general health problems.
vi. How much they believe that the pharmacist`s help is one of the factors which helps them achieve better clinical outcomes.
vii. How often they make use of the services provided by pharmacists.

For each question given, they were asked to answer using the 5-point Likert scale. In each case an option was given to state the reason for the answers given when the person wished to give a reason.

One of the objectives of this study involved studying the association between attitudes and beliefs and overall health and results brought about by pharmacist OTC intervention.

To fulfil this objective the third part of the study asked questions about health, results with OTC recommendations and control of chronic conditions. Each person was asked about one`s perception of his/her overall health. Another question was set in order to measure the results brought about by the pharmacist`s OTC recommendation for minor ailments as perceived by the person and another question asked the person if he or she suffered from any chronic health condition and one`s perception of the condition`s control. All these questions were given a rating of 1 – 5. Number 1 indicating the worst possible state or outcome and number 5 indicating the best possible state or outcome.

Since another purpose of the study was to study the relationship between attitudes and beliefs towards community pharmacy services and compliance to medication, a tool that measures patient compliance and adherence to medication was implemented together with the questionnaire. The Treatment Adherence Questionnaire (TAQ) set by Anastasi (2017) was used since this tool had already been tested for its validity, reliability and practicality in a local scenario. The questionnaire utilized for the pharmacy and local council including the TAQ questionnaire is available in Appendix 3.

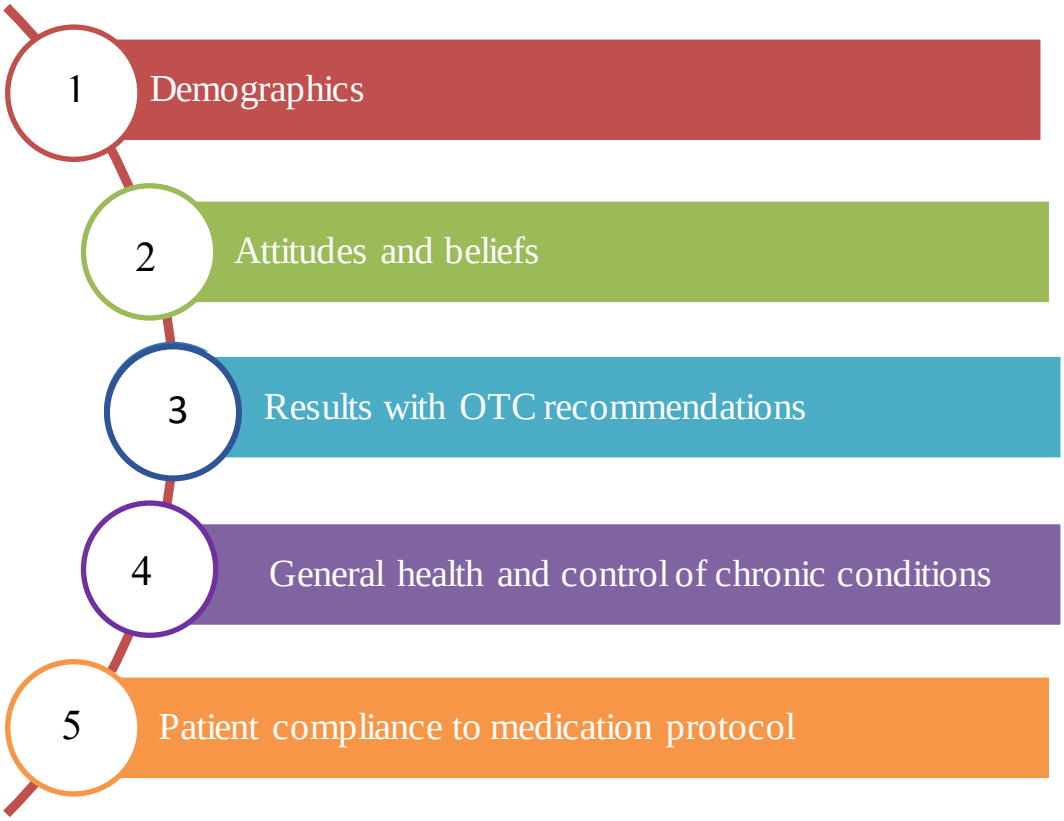

Figure 2.5: The pharmacy and local council questionnaire. This was divided into 5 sections. The first part asked about the person`s demographics, the second part asked about attitudes and beliefs about community pharmacy services, the third part asked about results following pharmacist OTC recommendations, the fourth part asked about health and control of chronic conditions and the fifth part asked about compliance to medication.

2.3 Validity and reliability testing

The content validity of the questionnaires was first confirmed by three pharmacists. Subsequently the questionnaires were distributed to 3 other pharmacists who work in community pharmacies and to 3 lay persons. They were asked to rate relevance, clarity and comprehensiveness by giving a rating from 1 – 5. One indicating the lowest score and 5 indicating the highest score. The ratings given are shown in Table 2.1.

Table 2.1: Rating given to relevance, clarity and comprehensiveness

	Relevance (Rating from 1-5)	Clarity (Rating from 1-5)	Comprehensiveness (Rating from 1-5)
Pharmacist 1	5	5	5
Pharmacist 2	5	4	5
Pharmacist 3	5	5	5
Lay person 1	5	5	5
Lay person 2	5	5	5
Lay person 3	4	5	5

Reliability testing was carried out using the inter-rater reliability method. Five different lay people from different educational backgrounds were first asked to answer both the telephone and the pharmacy/local council questionnaire. Four weeks later they were asked the same questions from the same questionnaires by a second interviewer who took part in the telephone survey. The Spearman rank correlation coefficient value was calculated for each questionnaire. The value for the telephone questionnaire was found to be 0.84 and the value for the pharmacy/local council questionnaire was found to be 0.88 demonstrating reliability of the questionnaires.

2.4 Ethics approval

The ethics approval was granted after submitting a copy of the proposal, the consent forms signed by the managing pharmacist or local councillors from the pharmacies and local councils chosen for the studies to take place. The copies of the questionnaires together with the copies of the information sheet for the interviewee as well as the consent forms also had to be submitted (The pharmacy/local council consent forms as well as the email demonstrating the ethics approval are available in Appendix 1).

2.5 Data collection procedure

The data collection took place between August 2019 and January 2020. The following gives a description of the data procedure carried out for both the telephone survey as well as for the pharmacy and local council survey.

2.5.1 Data collection - the telephone survey

When dialling a valid number and the call was accepted, a brief introduction to the study being conducted was given. The person was then asked whether he or she wanted to participate in this study and if he or she had some time to spare in order to answer a short interview. Each person was then also informed that he or she was free to withdraw from the interview at any time and was also free not to answer any questions that he or she did not wish to answer.

2.5.2 Data collection - the pharmacy/local council survey

The pharmacist or a member of staff of the local council invited participants to the study and introduced them to the interviewer. Once those interested to participate agreed to take part in the study they were given the consent form to sign (Appendix 1).

It was noted that a small number of people were not answering all the questions. To make up for this it was decided to interview 6 more people in total. Four more than planned from each of the first 4 different regions and 2 more than planned from the last region. A total of 206 questionnaires were thus collected.

2.6 Data analysis

The information obtained from both questionnaires was inputted onto the online data inputting tool "survey monkey". It was then analyzed by SPSS. Microsoft Excel was used to construct tables and charts.

2.6.1 Data analysis - the telephone survey

The data analysis of the telephone questionnaire was split into a number of sections (Figure 2.6). First the analysis of the demographics was carried out. This was done as follows:

- The number and percentage of males and females.

- The number and percentage of the different age groups. These were divided into three section 18 – 29 years, 30 – 55 years and 56 years and over.
- The number and percentage of the various levels of education. These were divided into four sections – those who had a primary level of education, those who had a secondary level of education, those who had post-secondary level of education and those who had a tertiary education.

In order to analyze each of the three questions related to attitudes and beliefs about community pharmacy service and their utilization a number and percentage for each answer given was also derived. Comparative analysis was then carried out between:

- Answers given to each of the 3 questions related to attitudes and beliefs and demographics.
- How much the people believe that the pharmacist is an important healthcare provider for their general health concerns and utilization of pharmaceutical services.
- How much the people believe that the pharmacists can help with minor health problems and utilization of pharmaceutical services.

In order to compare the above categorical variables a chi-square test was applied since such a test is relevant to examine the level of association between any two categorical variables.

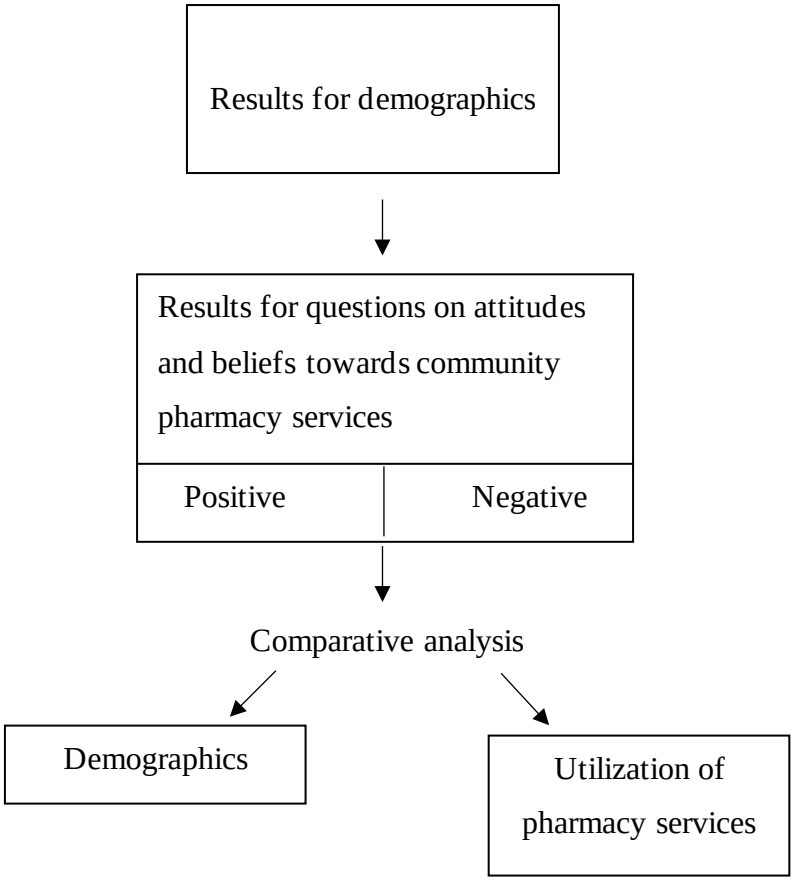

Figure 2.6: Data analysis – telephone questionnaire. This was first carried out by assessing the results obtained for the demographics and question on attitudes and beliefs about community pharmacy services as well as utilization of the services. Comparative analysis between attitudes and beliefs about community pharmacy services and demographics and utilization of pharmacy services was then carried out.

2.6.2 Data analysis - the pharmacy/local council survey

The pharmacy and local council interview data analysis was also split into a number of sections. Figure 2.7 outlines the first part of the data analysis for the interview. For the demographics the same procedure as the one carried out for the telephone survey was implemented. The same process was carried out for gender, for the age groups and for the various levels of education.

Each question related to attitudes and beliefs was again analyzed. The answers given to overall health, results from OTC recommendations and presence and control of chronic health conditions which were given a rating of 1 – 5 were also analysed.

Three measures were taken when it came to analyse adherence to medication. One was the rating for the question "Do you take your prescribed medication", another one was the rating for "Do you ever miss a dose". These first two measures were given a rating from 0 – 5, 0 indicating the worst possible outcome and 5 indicating the best possible outcome.

These questions were included in the TAQ questionnaire. The other measure was the overall mark (out of 100) as recommended in the TAQ questionnaire. It was decided to use these 3 measures from the TAQ questionnaire because: The TAQ questionnaire was a very good tool for people getting free medicines suffering from chronic diseases and could thus give a very good rating of adherence to medication for such people, however when interviewing people who did not suffer from chronic diseases there were a number of questions which might not have been a good measure of adherence to medication. Such questions included: "Do you have anyone to assist your daily needs with the management

of your condition?" and "Do you obtain your medicines for free?" Giving a score of 0 in each of the above questions would not necessarily mean that the person is less compliant or adheres less to medication. There were another two questions related to travelling abroad. These were: "If you travel abroad, do you take along your medicines?" and "When you go abroad do you take along with you the relevant documents containing information on your prescribed medicines?" A number of people never went abroad and so these people could not answer the questions related to travelling and so their score could be affected.

The questions "Do you take your prescribed medication" and "Did you ever miss a dose?" which were in the TAQ questionnaire were deemed as direct simple questions which provided an alternative way to measure adherence. Such an alternative measure of adherence could be helpful to measure adherence for people who did not suffer from chronic conditions and for those people do not go abroad.

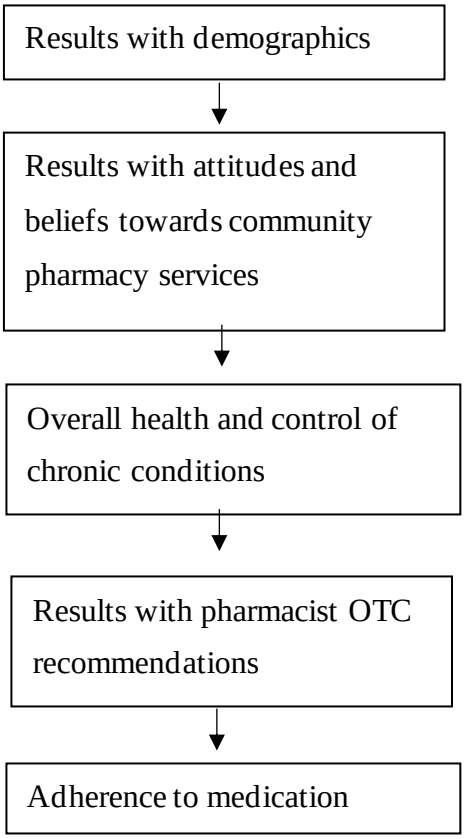

Figure 2.7: Preliminary data analysis – pharmacy/local council interview. For the first part of this data analysis, the number and percentage of the results given to each answer were worked out and tabulated.

Comparative analysis was carried out in order to study the association of a number of factors with each other (figure 2.8). Comparative analysis was carried out between the responses given to two statements and demographics. The two statements were the ones which were asking about attitudes and beliefs towards community pharmacy services and to what extent the person believes that overall the pharmacist`s help is one of the factors which helps to achieve better clinical outcomes. These associations were analyzed using Chi-square test since this is a test used to compare the level of association between two categorical variables.

Comparative analysis between attitudes and beliefs towards community pharmacy services and to what extent the person believes that the pharmacist`s help is one of the factors which helps achieve better clinical outcomes was also carried out with a number of outcomes. These outcomes were:

- How much the person makes use of community pharmacy services.
- Perception of Health.
- Results with pharmacists` OTC recommendations.
- How much the person takes his/ her prescribed medication.
- How much the person does not miss a dose.

The total scores given to the TAQ questionnaire were then divided into 3 groups – those who had a score between 0 – 50, those who had a score of 51 – 75 and those who had a score of 76 – 100. The level of association between the responses given to the two statements asking about attitudes and beliefs towards community pharmacy services and to what extent the person believes that overall the pharmacist`s help is one of the factors which helps to achieve better clinical outcomes and each of these three groups of TAQ score was carried out.

All these comparative analysis were carried out using Kruskal-Wallis test. This test was used as it could compare 3 or more groups against a continuous variable.

A final comparative analysis between more positive attitudes and beliefs with the presence or absence of a chronic condition described in the questionnaire was carried out. This was done using the Mann-Whitney test. The purpose was to check whether people with more chronic conditions tended to have more positive or more negative attitudes and beliefs towards community pharmacy services. The Mann-Whitney Test was used since this test is used to compare outcomes between two independent groups which do not need to be normally distributed.

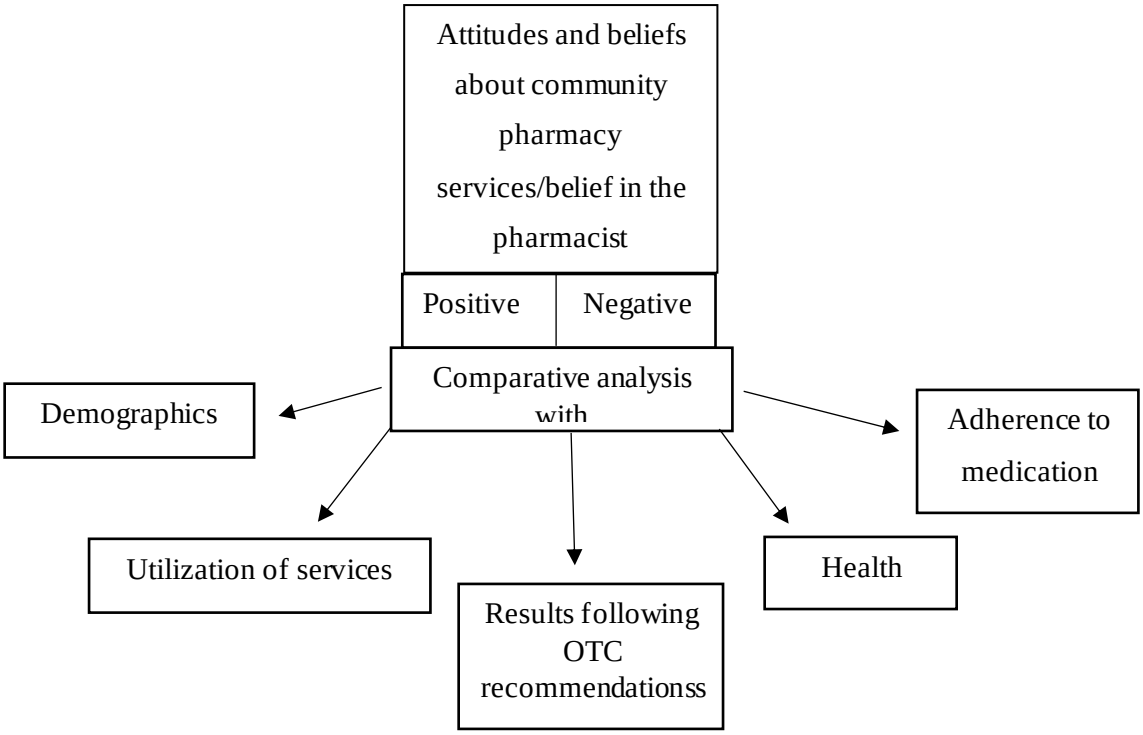

Figure 2.8: Comparative data analysis – pharmacy/local council interview. For the second part of this data analysis comparative analysis between attitudes and beliefs about community pharmacy services/belief in the pharmacist and demographics, utilization of pharmaceutical services, results following OTC recommendations, health and adherence to medication was carried out.

2.7 The dynamics of the outcomes

By carrying out the research as outlined in this chapter, processing the data and carrying out all the comparative analysis all the purposes of the research could be reached. The first outcome, assessing the attitudes and beliefs of people towards community pharmacy services in Malta was achieved by processing the replies given to the answers of the telephone questionnaires and to the questions related to attitudes and beliefs towards community pharmacy services. The second outcome which was to assess the influence of attitudes and beliefs of patients about community pharmacy services on four basic outcomes: utilization of these services, health, clinical outcomes brought about following pharmacist OTC recommendations and adherence to medication could be reached by carrying the various comparative analysis as outlined.

Chapter 3

Results

Following the data collection procedure, the processing of results was carried out. These results showed that overall the people living in Malta have positive attitudes and beliefs towards community pharmacy services. The telephone survey showed that 91% of respondents believe and trust that the pharmacist is an important healthcare provider for their general health concerns. The pharmacy/local council survey showed that 95% have positive attitudes and beliefs about community pharmacy services.

The respondents to the pharmacy/local council survey also showed that overall they had positive results with pharmacists` OTC recommendations (93%). The results also showed a statistically significant association between more positive attitudes and beliefs towards community pharmacy services and belief in the pharmacist with a number of factors.

These factors were more utilization of pharmaceutical services, more positive results with pharmacists` OTC recommendations and more adherence to medication ($p$ value $<0.05$). There was no statistically significant association between more positive attitudes and beliefs towards community pharmacy services or belief in the pharmacist`s help to achieve better clinical outcomes and health (p value >0.05).

3.1 The telephone survey results

For the telephone survey, 1,126 people agreed to take part. Most people answered all the questions, however some preferred to leave some questions out. The following results show the responses generated and the processing of such responses and results.

3.1.1 Demographics – the telephone survey

There were roughly as many males as there were females – 49% of respondents were males and 51% of respondents were females.

Figure 3.1 shows the various age groups of the people taking part in the telephone survey. There were people from all age groups, however most people who agreed to take part in the study were the ones aged between 30 and 55 years old.

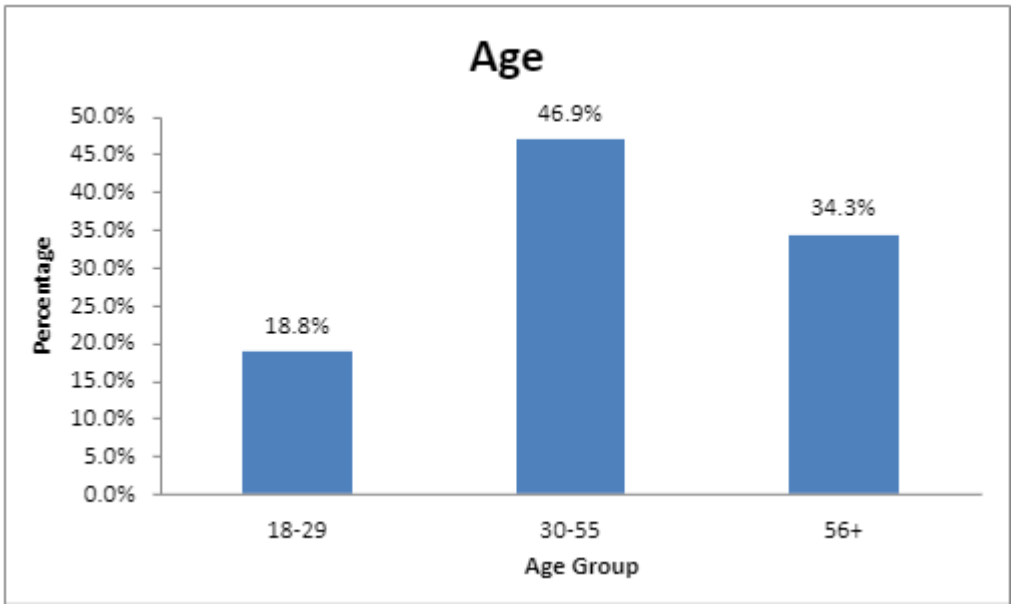

Figure 3.1: Age groups – people taking part in the telephone survey (n=1,066)

Figure 3.2 shows the different educational levels of the people taking part in the telephone survey. There were people from every educational background however most people interviewed had secondary level of education.

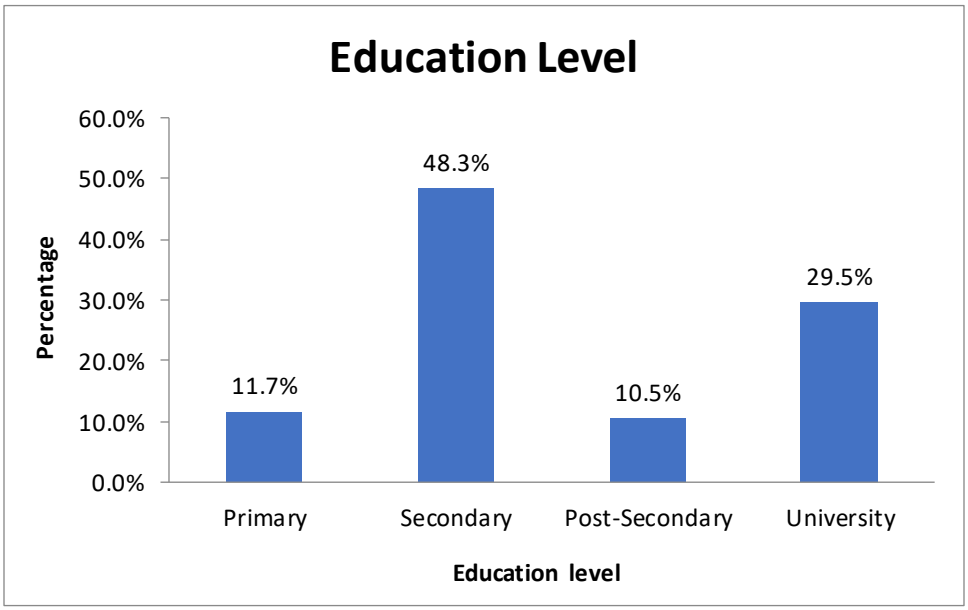

Figure 3.2: Educational levels – people taking part in the telephone survey (n=1,114)

3.1.2 Results given to the telephone survey

Table 3.1 shows the responses obtained to the three statements related to attitudes and beliefs towards community pharmacy services. The answers to these statements showed that overall people living in Malta have positive attitudes and beliefs towards community pharmacy services. They also showed that overall people living in Malta make use of community pharmacy services regularly.

Table 3.1: Results given to questions related to attitudes and beliefs of patients and utilization of pharmaceutical services (n=1,118; n=1,119 and n=1,107 respectively)

	Strongly Agree	Agree	Do Not Know	Disagree	Strongly Disagree	Weighted Average from 1 – 5 1 – strongly disagree, 5 strongly agree
I believe and trust that my pharmacist can help me with minor health problems. (n=1,118)	**720** 64.40%	**367** 32.83%	**17** 1.52%	**12** 1.07%	**2** 0.18%	**4.60**
I believe and trust that my pharmacist is an important healthcare provider for my general health concerns. (n=1,119)	**656** 58.62%	**363** 32.4%	**54** 4.83%	**41** 3.66%	**5** 0.45%	**4.45**
I often make use of the pharmaceutical services offered by my pharmacist for minor ailments, over the counter medication, health advice and guidance and general medication use. (n=1,107)	**710** 64.14%	**282** 25.47%	**66** 5.96%	**41** 3.70%	**8** 0.72%	**4.49**

3.1.3 Comparative analysis with demographics – the telephone survey

When carrying out the comparative analysis between answers given related to attitudes and beliefs towards community pharmacy services with demographics there were some associations that were noted.

There was a statistically significant association between the first statement which was "I believe and trust that my pharmacist can help me with minor health problems" and education, gender and age.

Table 3.2 shows the association between belief and trust in the pharmacist and education. People of all levels of education tended to agree or strongly agree to the statement "I believe and trust that my pharmacist can help me with minor health problems", however, individuals with lower education tended to more strongly agree to this statement.

Table 3.2: Association between belief and trust in the pharmacist and education (n=1,114)

Education		I believe and trust that my pharmacist can help me with minor health problems.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
Primary	**Count**	91	35	0	4	130
	%	70.0%	26.9%	0.00%	3.1%	100%
Secondary	**Count**	362	162	8	6	538
	%	67.3%	30.1%	1.5%	1.1%	100%
Post-Secondary	**Count**	73	38	6	0	117
	%	62.4%	32.5%	5.1%	0.0%	100%
University	**Count**	184	131	11	3	329
	%	55.9%	39.8%	3.3%	0.9%	100%
Total	**Count**	710	366	25	13	1114
	%	63.7%	32.9%	2.2%	1.2%	100.0%

Statistically significant. Chi-Square = 28.554, p value = 0.001

Table 3.3 shows the association between belief and trust in the pharmacist and gender. Both males and females tended to strongly agree or agree to the statement related to belief and trust in the pharmacist, however there was a statistically significant association between this statement and gender. Females tended to more strongly agree to this statement.

Table 3.3: Association between belief and trust in the pharmacist and gender (n=1,106)

Gender		I believe and trust that my pharmacist can help me with minor health problems.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
Female	**Count**	368	15	11	3	541
	%	68.0%	29.4%	2.0%	0.6%	100%
Male	**Count**	337	204	14	10	565
	%	59.6%	36.1%	2.5%	1.8%	100%
Total	**Count**	705	363	25	13	1106
	%	63.7%	32.8%	2.3%	1.2%	100.0 %

Statistically significant. Chi-Square = 10.555, p value = 0.014

There was a statistically significant association between belief and trust in the pharmacist and age (Table 3.4). Although people of all age groups tended to strongly agree or agree with the statement " I believe and trust that my pharmacist can help me with minor health problems", people of the older generation tended to agree more strongly.

Table 3.4: Association between belief and trust in the pharmacist and age (n=1,076)

Age		I believe and trust that my pharmacist can help me with minor health problems.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
18-29	**Count**	113	85	9	3	210
	%	53.8%	40.5%	4.3%	1.4%	100%
30-55	**Count**	311	173	13	3	500
	%	62.2%	34.6%	2.6%	0.6%	100%
56+	**Count**	271	88	2	5	366
	%	74.0%	24.0%	0.5%	1.4%	100%
Total	**Count**	695	346	24	11	1076
	%	64.6%	32.2%	2.2%	1.0%	100.0%

Statistically significant. Chi-Square = 32.796, p value = 0.000

There was no statistically significant association between the second statement which was "I believe that my pharmacist is an important healthcare provider for my general health concerns" and education or age, however there was a statistically significant association between this statement and gender (Table 3.5). Females tended to agree more strongly to this statement than males.

Table 3.5: Association between belief that the pharmacist is an important healthcare provider and gender (n=1,106)

Gender		I believe that my pharmacist is an important healthcare provider for my general health concerns.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
Female	**Count**	337	163	27	14	541
	%	62.3%	30.1%	5.0%	2.6%	100%
Male	**Count**	304	196	33	32	565
	%	53.8%	34.7%	5.8%	5.7%	100%
Total	**Count**	641	359	60	46	1106
	%	58.0%	32.5%	5.4%	4.2%	100.0%

Statistically significant. Chi-Square = 11.861, p value = 0.008

There was no statistically significant association between the third statement which was "I often make use of the pharmaceutical services offered by my pharmacist for minor ailments, over the counter medication, health service and guidance and general medication use" and education.

Table 3.6 shows that there was a statistically significant association between utilization of pharmaceutical services and gender. Females tended to use the services more than males.

Table 3.6: Association between utilization of pharmaceutical services and gender (n=1,106)

Gender		I often make use of the pharmaceutical services offered by my pharmacist for minor ailments, over the counter medication, health advice and guidance and general medication use.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
Female	**Count**	362	129	36	14	541
	%	66.9%	23.8%	6.7%	2.6%	100%
Male	**Count**	334	149	49	33	565
	%	59.1%	26.4%	8.7%	5.8%	100%
Total	**Count**	696	278	85	47	1106
	%	62.9%	25.1%	7.7%	4.2%	100.0%

Statistically significant. Chi-Square = 11.719, p value = 0.000

Table 3.7 shows that there was a statistically significant association between utilization of pharmaceutical services and age. People over 30 years of age tended to use the pharmaceutical services more.

Table 3.7: Association between utilization of pharmaceutical services and age (n=1,076)

Age		I often make use of the pharmaceutical services offered by my pharmacist for minor ailments, over the counter medication, health advice and guidance and general medication use.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
18-29	**Count**	117	64	15	14	210
	%	55.7%	30.5%	7.1%	6.7%	100%
30-55	**Count**	308	138	35	19	500
	%	61.6%	27.6%	7.0%	3.8%	100%
56+	**Count**	252	73	29	12	366
	%	68.9%	19.9%	7.9%	3.3%	100%
Total	**Count**	677	275	79	45	1076
	%	62.9%	25.6%	7.3%	4.2%	100.0%

Statistically significant. Chi-Square = 15.481, p value = 0.017

3.1.4 Comparative analysis between attitudes and beliefs and utilization of pharmaceutical services

There was a statistically significant association between individuals who gave more positive answers to the first two statements and utilization of pharmaceutical services.

Table 3.8 shows that there was a statistically significant association between belief and trust that the pharmacist can help with minor health problems and utilization of pharmaceutical services. Those who said that they strongly agree/agree that the pharmacist can help with minor health problems tended to use pharmaceutical services more.

Table 3.8: Association between belief in the pharamicst to help with minor health problems and utilization of pharmaceutical services (n=1,126)

I often make use of the pharmaceutical services offered by my pharmacist for minor ailments, over the counter medication, health advice and guidance and general medication use.		I believe that my pharmacist can help me with minor health problems.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
Strongly agree	**Count**	600	103	6	1	710
	%	84.5%	14.5%	0.9%	0.1%	100%
Agree	**Count**	63	206	9	4	282
	%	22.3%	73.0%	3.2%	1.4%	100%
Do Not Know	**Count**	31	46	4	4	85
	%	36.5%	54.1%	4.7%	4.7%	100%
Disagree/ Strongly Disagree	**Count**	26	12	6	5	49
	%	53.1%	24.5%	12.2%	10.2%	100%
Total	**Count**	720	367	25	14	1126
	%	63.9%	32.6%	2.2%	1.2%	100.0%

Statistically significant. Chi-square = 438.803, p value = 0.000

Table 3.9 shows that there was a statistically significant association between belief that the pharmacist is an important healthcare provider for one`s general health concerns and utilization of pharmaceutical services. Those who said that they strongly agree/agree that the pharmacist is an important healthcare provider tended to use pharmaceutical services more.

Table 3.9: Associaton between belief in the pharmacist as an important healthcare provider and utilization of pharmaceutical services (n=1,126)

I often make use of the pharmaceutical services offered by my pharmacist for minor ailments, over the counter medication, health advice and guidance and general medication use.		I believe that my pharmacist is an important healthcare provider for my general health concerns.				Total
		Strongly agree	Agree	Do Not Know	Disagree/ Strongly Disagree	
Strongly agree	**Count**	565	107	20	18	710
	%	79.6%	15.1%	2.8%	2.5%	100%
Agree	**Count**	59	194	20	9	282
	%	20.9%	68.8%	7.1%	3.2%	100%
Do Not Know	**Count**	12	51	15	7	85
	%	14.1%	60.0%	17.6%	8.2%	100%
Disagree/ Strongly Disagree	**Count**	20	11	6	12	49
	%	40.8%	22.4%	12.2%	24.5%	100%
Total	**Count**	656	363	61	46	1126
	%	58.3%	32.2%	5.4%	4.1%	100.0 %

Statistically significant. Chi-square = 453.691, p value = 0.000

3.2 Pharmacy and local council survey results

For the telephone interview, 206 people were interviewed. Most people answered all questions, however there were some people who opted not to answer some questions.

3.2.1 Demographics – The pharmacy/local council survey

When looking at gender of the people taking part in this study it was found that there were more females (61%) than males (39%).

Figure 3.3 shows the various age groups of the people taking part in the community pharmacy/local council interview. People across all age groups took part in this study, however most people were over 30 years old.

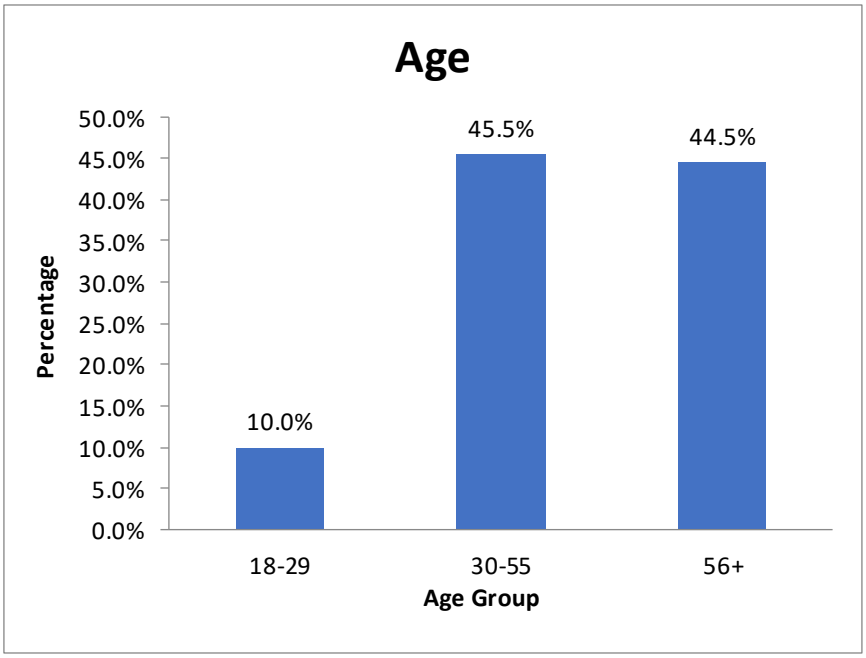

Figure 3.3: Age groups - people taking part in the community pharmacy/local council interview (n=200)

Figure 3.4 shows the educational level of the people taking part in the pharmacy/local council survey. There were people from all educational levels, however most people interviewed had secondary level of education.

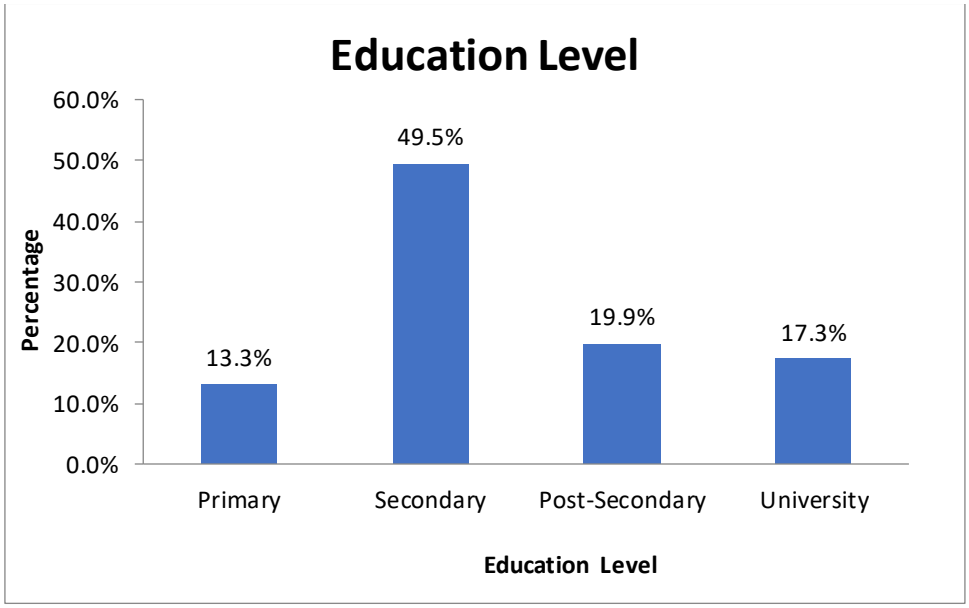

Figure 3.4: Educational level - people taking part in the community pharmacy/ local council interview (n= 200)

3.2.2 Results given to questions related to attitudes and beliefs and utilization of pharamceutical services

Table 3.10 shows the responses given to the statements regarding attitudes and beliefs of people towards community pharmacy services. They show that overall respondents had positive attitudes and beliefs towards community pharmacy services and utilize these services regularly. Out of the 206 people interviewed most people responded that they either “agree” or “strongly agree” to each statement.

Table 3.10: Responses to statements related to pharmaceutical services (n = 206 for all statements except for second and last 2 statements: n = 201, 202 and 197)

	Strongly Agree	agree	Do not know	Disagree	Strongly Disagree	Weighted Average (rating from 1 – 5, 1 strongly disagree, 5 strongly agree)
I believe the pharmacist is highly knowledgeable about health and health problems in general. (n=206)	**124** 60.19%	**69** 33.50%	**10** 4.85%	**3** 1.46%	**0** 0.00%	**4.52**
I believe that the pharmacist is an expert in medicines. (n=201)	**101** 50.25%	**69** 34.33%	**15** 7.46%	**14** 6.97%	**2** 1.00%	**4.26**
Overall I have had positive experiences with community pharmacy services. (n=206)	**143** 69.42%	**51** 24.76%	**9** 4.37%	**2** 0.97%	**1** 0.49%	**4.62**

Overall I have positive attitudes and beliefs about community pharmacy services. (n=206)	**148** 71.84%	**48** 23.30%	**4** 1.94%	**5** 2.43	**1** 0.49%	**4.64**
Overall I follow the pharmacist`s advice for my general health problems. (n=206)	**136** 66.02%	**49** 23.79%	**10** 4.85%	**7** 3.40%	**4** 1.94%	**4.49**
Overall I believe that the pharmacist`s help is one of the factors which helps me achieve better clinical outcomes. (n=202)	**131** 64.85%	**48** 23.76%	**13** 6.44%	**10** 4.95%	**0** 0.00%	**4.49**
Overall I often make use of services provided by pharmacists. (n=197)	**132** 67.00%	**43** 21.83%	**9** 4.57%	**6** 3.05%	**7** 3.55%	**4.46**

3.2.3 Rating of health and results with OTC recommendations

Table 3.11 shows the responses given by the people to "How do you rate your health status from 1 to 5?" and "How do you rate your overall results with pharmacists over the counter recommendations for minor ailments from 1 to 5?" Number 1 in both cases indicated the worst health status and number 5 indicated the best health status.

Most people gave a rating of 4 or 5 showing that most people rate their health as overall positive. Most people also rate their results with OTC recommendations as overall positive.

Table 3.11: Responses given by the people regarding rating of health status (n=204) and results with OTC recommendations (n=201)

Rating	How do you rate your health status from 1 to 5?		How do you rate your overall results with pharmacists over the counter recommendations for minor ailments from 1 to 5?	
1	0	0%	3	1.49%
2	3	1.47%	4	1.99%
3	30	14.71	8	3.89%
4	105	51.47%	45	22.39%
5	66	32.35%	141	70.15%
N	204	100.00%	201	100.00%

3.2.4 Chronic conditions and rating of their control

Table 3.12 shows the number of people suffering from a chronic condition and the rating of each condition`s control as perceived by the person, number 1 indicating the worst possible health outcome and number 5 indicating the best possible health outcome. There were a number of people who suffered from more than one chronic condition. Most people rated their perception of control as overall positive. The average rating of each chronic condition`s control was very high.

Table 3.12: Rating of control of chronic conditions

Chronic condition	Number of people	Control of condition. Average rating (1-5)
High blood pressure	53	4.8
Diabetes	20	4.6
Hypothyroidism	13	4.9
High Blood cholesterol	24	4.7
Heart Problems	13	4.6
Other problems	38	4.4

3.2.5 Comparative analysis between attitudes and beliefs towards community pharmacy services and other factors

The following results show the comparative analysis carried out between attitudes and beliefs towards community pharmacy services with demographics and other factors.

There was no statistically significant association between more positive attitudes and beliefs towards community pharmacy services and gender and level of education. Most people across all age groups said that they have positive attitudes and beliefs towards community pharmacy services. People over the age of 30 tended to strongly agree more to this statement. This association was close to being statistically significant (p value = 0.051)

This result compared to another study carried out locally which showed that older people gave a higher rating to pharmaceutical services than the younger generation (Hefny Mohamed, 2018).

Table 3.13: Association between attitudes and beliefs and age (n=200)

	Age					
			18-25	30-55	56 +	Total
Overall I have positive attitudes and beliefs about community pharmacy services.	Strongly disagree	Count	0	1	0	1
		% within Age group	0.0%	1.1%	0.0%	0.5%
	Disagree	Count	1	0	3	4
		% within Age group	5.0%	0.0%	3.4%	2.0%
	Do not know	Count	4	3	5	12
		% within Age group	20.0%	3.3%	5.6%	6.0%
	Agree	Count	6	19	17	42
		% within Age group	30.0%	20.9%	19.1%	21.0%
	Strongly Agree	Count	9	68	64	141
		% within Age group	45.0%	74.7%	71.9%	70.5%
N			20	91	89	200
% within Age Group			100%	100%	100%	100%

Chi-square 15.442, p value = 0.051

Table 3.14 shows the association between attitudes and beliefs towards community pharmacy services and health status, result with OTC recommendations, adherence to prescribed medicine, missing a dose and utilization of pharmaceutical services. The rating was either from 0 – 5 or from 1 – 5. In each case 0 or 1 indicates the worst possible state or outcome and 5 indicates the best possible state or outcome.

Table 3.14: The association between attitudes and beliefs and a number of outcomes

Overall I have positive attitudes and beliefs about community pharmacy services.	Overall health status (1 – 5)	Results with OTC recommendations (1 - 5)	Adherence to prescribed medicines (0 – 5)	Missing a dose (0 – 5)	Utilization of pharmaceutical services (1 – 5)
Strongly disagree	5.00	2.00	1.00	1.00	4.00
	1	1	1	1	7
	.000	.000	.000	.000	1.155
Disagree	4.75	3.25	2.25	1.50	2.83
	4	4	4	4	6
	.500	2.062	.957	.577	1.329
Do not know	3.92	4.17	3.92	2.92	4.44
	12	12	12	12	9
	.515	1.193	1.311	1.621	0.726
Agree	4.02	4.63	4.07	3.29	4.30
	41	41	42	42	43
	.821	.536	1.314	1.255	0.674
Strongly Agree	4.16	4.70	4.27	3.47	4.86
	140	137	140	139	132
	.692	.573	1.398	1.510	.535
N	4.13	4.61	4.15	3.35	4.58
	198	195	199	198	197
	.715	.726	1.406	1.482	0.742

Table 3.15 shows the Kruskal-Wallis test of the associations carried out in table 3.14. There was no statistically significant association between more positive attitudes and beliefs towards community pharmacy services and health. There was an association between more positive attitudes and beliefs and results with OTC recommendations. From a scale of 1 to 5, 1 indicating the least positive outcome and 5 indicating the most positive outcome, those who had more positive attitudes and beliefs had a higher rating related to results with OTC recommendations as compared to those who had negative attitudes and beliefs towards community pharmacy services. Although this association was not statistically significant when applying the Kruskal-Wallis test, it was very close to being statistically significant. There was a statistically significant association between more positive attitudes and beliefs and adherence to medication. There was a statistically significant association between attitudes and beliefs towards community pharmacy services and the answer to "Do you take your prescribed medicine?" and "Do you ever miss a dose?" There was also a statistically significant association between patients who have more positive attitudes and beliefs and utilization of pharmaceutical services.

Those who had more positive attitudes and beliefs about community pharmacy services tended to have better results with OTC recommendations, adhere to medication more, miss a dose less and utilize the pharmaceutical services more.

Table 3.15: Kruskal-Wallis Test – Association between attitudes and beliefs and outcomes

	Null hypothesis	Test	Significance
1	The distribution of overall health status is the same across categories of attitudes and beliefs about community pharmacy services	Independent-Samples Kruskal-Wallis Test	.127
2	The distribution of results with OTC recommendations is the same across categories of attitudes and beliefs about community pharmacy services	Independent-Samples Kruskal-Wallis Test	.051**
3	The distribution of adherence to prescribed medicines is the same across categories of attitudes and beliefs about community pharmacy services	Independent-Samples Kruskal-Wallis Test	.003*
4	The distribution of missing a dose is the same across categories of attitudes and beliefs about community pharmacy services	Independent-Samples Kruskal-Wallis Test	.028*
5	The distribution of utilization of pharmaceutical services is the same across categories of attitudes and beliefs about community pharmacy services	Independent-Samples Kruskal-Wallis Test	000*

***statistically significant p value <0.05**

**** close to being statistically significant p value = 0.051**

Table 3.16 shows the association between attitudes and beliefs of patients towards community pharmacy services and TAQ score. There was a statistically significant association between more positive attitudes and beliefs and higher TAQ score groups when carrying out the Kruskal-Wallis Test. Those people who have most positive attitudes and beliefs had the highest TAQ score group when compared to those who had negative attitudes and beliefs. This association was statistically significant.

Table 3.16: Associaton between attitudes and beliefs and TAQ score (n=200)

Overall I have positive attitudes and beliefs about community pharmacy services.			
TAQ score	Mean	N	Std. Deviation
0-50	4.43	35	1.008
51-75	4.36	44	.892
76-100	4.72	121	.536
N	4.59	200	.738

Statistically significant p value = 0.033

3.2.6 Comparative analysis between belief in the pharmacist's help and other factors

The following results show the comparative analysis between the belief in the pharmacist`s help to achieve better clinical outcomes and demographics and a number of other outcomes.

There was no association between the statement "Overall I believe that the pharmacist`s help is one of the factors which helps me achieve better clinical outcomes" and age or education. There was a statistically significant association with gender. Table 3.18 shows the association between belief in the pharmacist`s help to achieve better clinical outcomes and gender. Both males and females agreed or strongly agreed that the pharmacist`s help is one of the factors which helps to achieve better clinical outcomes, however females tended to agree more strongly than males.

Table 3.17: Association between belief in the pharmacist's help and gender (n=196)

			Female	Male	Total
Overall I believe that the pharmacist`s help is one of the factors which helps me achieve better clinical outcomes.	Disagree	Count	2	7	9
		% within Gender	1.7%	9.2%	4.6%
	Do not know	Count	9	4	13
		% within Gender	7.5%	5.3%	6.6%
	Agree	Count	25	22	47
		% within Gender	20.8%	28.9%	24.0%
	Strongly agree	Count	84	43	127
		% within Gender	70.0%	56.6%	64.8%
N			120	76	196
% within age groups			100%	100%	100%

Statistically significant. Chi-square = 8.689, p value = 0.034

Table 3.18 shows the comparative analysis between the answers given to the statement "Overall I believe that the pharmacist`s help is one of the factors which helps me achieve better clinical outcomes" and health status, result with OTC recommendations, adherence to prescribed medicine, missing a dose and utilization of pharmaceutical services. The rating was either from 0 – 5 or from 1 – 5. In each case 0 or 1 indicates the worst possible state or outcome and 5 indicates the best possible state or outcome.

Table 3.18: Association between belief in the pharmacist's help to achieve better clinical outcomes and a number of outcomes

Belief in Pharmacist `s help		Overall health status (1 – 5)	Results with OTC recommendations (1 - 5)	Adherence to prescribed medicines (0 – 5)	Missing a dose (0 – 5)	Utilization of pharmaceutical services (1 – 5)
Disagree	Mean	4.13	2.88	2.11	2.00	2.44
	N	8	8	9	9	9
	Std. Deviation	.641	1.553	1.616	1.323	1.509
Do not know	Mean	4.23	4.31	4.00	2.83	3.62
	N	13	13	12	12	13
	Std. Deviation	.599	.630	1.477	1.586	1.121
Agree	Mean	4.02	4.70	4.43	3.47	4.33
	N	47	47	47	47	45
	Std. Deviation	.794	.507	.801	1.158	.564
Strongly Agree	Mean	4.15	4.75	4.23	3.46	4.76
	N	126	123	127	126	126
	Std. Deviation	.705	.472	1.449	1.542	.731
Total	Mean	4.12	4.63	4.16	3.36	4.48
	N	194	191	195	194	193
	Std. Deviation	.716	.683	1.401	1.479	.947

Table 3.19 shows the Kruskal-Wallis test of the associations carried out in Table 3.18.

There was no statistically significant association between more belief in the pharmacist`s help to achieve better clinical outcomes and health. There was a statistically significant association between more belief in the pharmacist`s help and results with OTC recommendations. There was a statistically significant association between more positive belief in the pharmacist`s help and adherence to medication. There was a statistically significant association between belief in the pharmacist`s help and the answer to "Do you take your prescribed medicine?" and "Do you ever miss a dose?" There was also a statistically significant association between patients who have more beliefs in the pharmacist`s help and utilization of pharmaceutical services.

Those who had more positive belief in the pharmacist`s help to achieve better clinical outcomes tended to have better results with OTC recommendations, adhere to medication more, miss a dose less and utilize the pharmaceutical services more.

Table 3.19: Kruskal-Wallis Test – Association between belief and trust in the pharmacist's help and outcomes

	Null Hypothesis	Test	Sig
1	The distribution of Overall health status is the same across categories of belief in the pharmacist.	Independent-Samples Kruskal - Wallis Test	.761
2	The distribution of results with OTC recommendations is the same across categories of belief in the pharmacist.	Independent-Samples Kruskal - Wallis Test	.000*
3	The distribution of adherence to medication is the same across categories of belief in the pharmacist.	Independent-Samples Kruskal - Wallis Test	.001*
4	The distribution of missing a dose is the same across categories of belief in the pharmacist.	Independent-Samples Kruskal - Wallis Test	.017*
5	The distribution of utilization of pharmaceutical services is the same across categories of belief in the pharmacist	Independent-Samples Kruskal-Wallis Test	.000*

***statistically significant p value <0.05**

Table 3.20 shows the association between belief in the pharmacist`s help to achieve better clinical outcomes and TAQ score divided into groups. There was a statistically significant association between more positive beliefs in the pharmacist`s help to achieve better clinical outcomes and higher TAQ score groups when carrying out the Kruskal-Wallis Test. Those people who believed mostly in the pharmacist`s help had the highest TAQ score group when compared to those who had negative beliefs in the pharmacist`s help.

Table 3.20: Association between belief and trust in the pharmacist's help and TAQ score (n=196)

Overall I believe that the pharmacist`s help is one of the factors which helps me achieve better clinical outcomes.			
TAQ score	Mean	N	Std. Deviation
0-50	4.38	34	1.101
51-75	4.23	43	.868
76-100	4.61	119	.665
N	4.49	196	.813

***statistically significant p value = 0.018**

3.2.7 Comparative analysis between more positive attitudes and beliefs and the presence of chronic health conditions

There was no statistically significant association between more positive attitudes and beliefs towards community pharmacy services and the presence or absence of a chronic condition. This was carried out by means of the Mann-Whitney test.

3.3 Summary of results

Figure 3.5 gives a summary of the results obtained from this research. It shows that overall respondents have positive attitudes and beliefs towards community pharmacy services. There was an association between more positive attitudes and beliefs towards community pharmacy services and results with OTC recommendations, adherence to medication and utilization of these services.

These results showed no association between more positive attitudes and beliefs towards community pharmacy services and health.

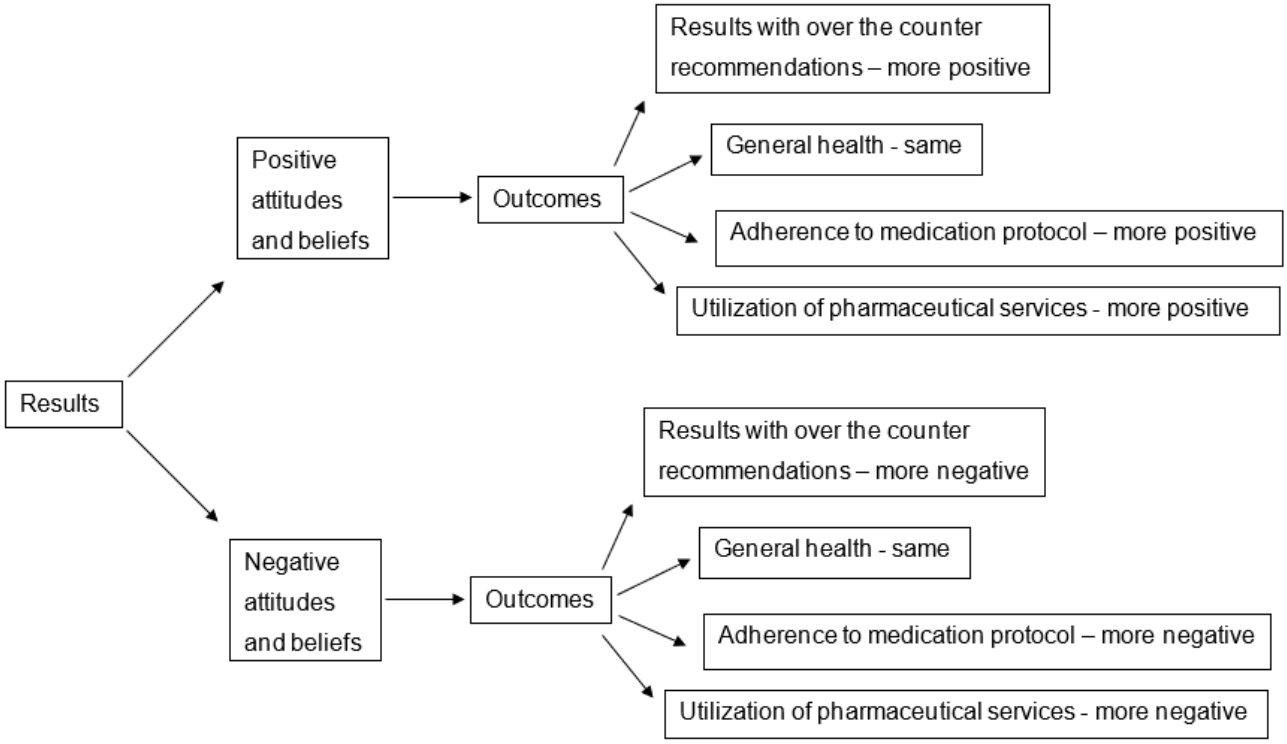

Figure 3.5: Summary of results. Results show that overall attitudes and beliefs about community pharmacy services in Malta are positive. They also show a statistically significant association between more positive attitudes and beliefs and a number of outcomes.

Chapter 4

Discussion

In this study, the results of the telephosurvey were obtained from a large number of respondents obtained by simple random sampling of people living in Malta. The second study was carried out from pharmacies and local councils. Both the telephone survey as well as the pharmacy and local council survey showed that overall the people living locally have positive attitudes and beliefs about community pharmacy services. This study was the first one carried out locally to investigate the association between attitudes and beliefs about community pharmacy services and outcomes. It showed that there was a statistically significant association between attitudes and beliefs about community pharmacy services and a number of outcomes.

4.1 Findings of this study

The results obtained from this study show how much the people living in Malta regard the pharmaceutical services as positive. A large percentage of people gave a positive reply by strongly agreeing or agreeing to all statements related to pharmaceutical services in both studies. This continues to give more evidence to such positive attitudes. These results are in line with other studies carried out locally (Wirth *et al*, 2011; Vella *et al*, 2015; Hefny Mohamed *et al*, 2018) as well as in other countries (Hindi *et al*, 2018; Irish Pharmacy Union, 2019[16]).

In Malta, people make use of pharmaceutical services regularly and most people rate their overall results with OTC recommendations as positive. This is in line with other studies carried out previously (Abacus Data, 2015[12]; Irish Pharmacy Union, 2019[16]). These results also showed that there was a statistically significant association between more positive attitudes and beliefs about community pharmacy services and more utilization of such services, better results with OTC recommendations and adherence to medication. People who had more positive attitudes and beliefs, utilized pharmaceutical services more, had better results with OTC recommendations and had better adherence to medication.

Such association was also shown in other studies carrying out comparative analysis between beliefs relating to a medication, health service provider or health service with clinical outcomes in a variety of healthcare settings (Mondloch *et al*, 2001; Dasgupta *et al*, 2014; Ellis *et al*, 2015; Rief *et al*, 2017).

There was no statistically significant association between more positive attitudes and beliefs about community pharmacy services and health as perceived by the patient.

INFORMATION ON ATTITUDES AND BELIEFS ABOUT COMMUNITY PHARMACY SERVICES IN MALTA FOLLOWING RESERACH

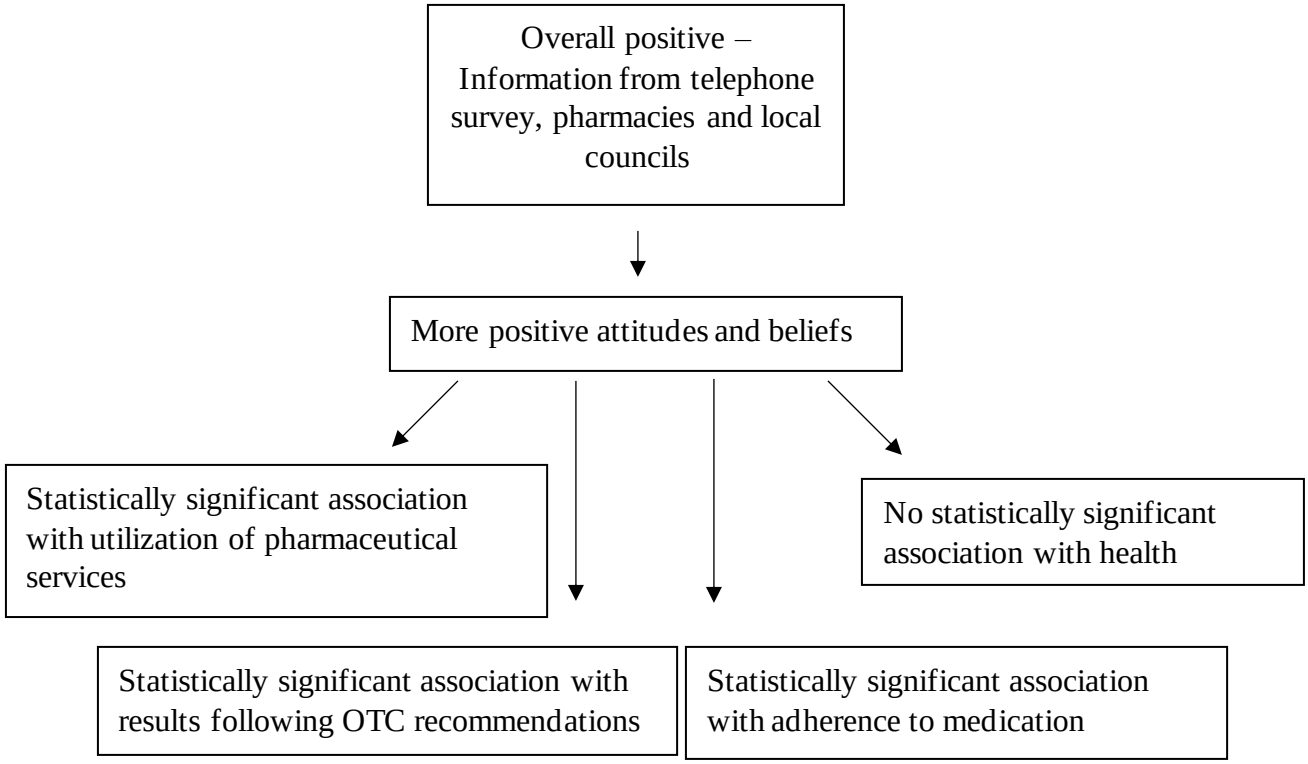

Figure 4.1: Information about attitudes and beliefs following this research. The information obtained from this study was different than previous ones carried out in Malta. The results of the telephone survey were obtained from a simple random sample obtained by telephone calls of the people living in Malta. Both the telephone survey as well as the pharmacy and local council survey showed that overall the people living locally have positive attitudes and beliefs about community pharmacy services. This study also showed that there was a statistically significant association between attitudes and beliefs about community pharmacy services and a number of factors. People who had more positive attitudes and beliefs utilized pharmaceutical services more, had better results with OTC recommendations and had better adherence to medication. There was no statistically significant association between more positive attitudes and beliefs and health.

4.2 Effects of attitudes, beliefs, expectations and perception

This study has shown that attitudes and beliefs about community pharmacy services may have an effect on results brought about as a result of pharmacist intervention. This could be because the way a person thinks will affect the person`s behaviour as well as compliance. This study showed that the pharmacist is one of the healthcare professionals most important to achieve better clinical outcomes, thus the more a patient believes in the pharmacist the more he or she will follow the recommendations of the pharmacist in order to help to bring about clinical outcomes.

There are various schools of thought which speak about the importance of attitudes, beliefs, expectations and perception and their effect on the individual's actions and outcomes. Religion for example speaks about the power of prayer which is based on beliefs. There are some documentations showing results of outcomes sometimes referred to as "miracles" which have come to be because of belief however, there is still the need to carry out more robust studies on such interventions and outcomes. In a systematic review of randomized controlled clinical trials involving complementary religious and spiritual interventions in physical health and quality of life for example, it was found that there were minor improvements in pain reduction, weight loss, quality of life and promotion in health behaviour however it was noted that there is a need for more research using methodologies which can be more comparable (Gonçalves *et al*, 2017). Spirituality has also been linked to better clinical outcomes. In a non-systematic narrative review of original and reliable scientific articles on spirituality published from 1972 to 2014 carried out by Tabei *et al,* (2016) it was shown that spirituality brought about a positive impact on health, improved well-being as well as recovery.

Another school of thought which gained popularity by media figures is the "Law of attraction". The film and book entitled "The Secret" are based on this premise which basically states that you attract what you think about and the way you feel about something shows you if you are in the process of getting a good or bad result. In the case of health or pharmaceutical services feeling good about such services would be indicative that more positive results will be brought about by such services while feeling bad about pharmaceutical services would be an indication that negative results would be brought about by such services. A way to change what will happen to someone would be to change to happier feeling thoughts about the subject.

Other schools of thought speak about the reticular activating memory present within the brain. This part of the brain is affected by the beliefs within the person According to this school of thought this is a vital part of activity of the brain because the person is exposed to a lot of information all the time and can only process a small amount of it. The reticular activating system works by choosing what comes into the person`s awareness by filtering out what is not aligned with the person`s beliefs and only accessing the information which is aligned to the one`s beliefs.

The problem with this situation is that if someone has a belief which is harmful to oneself, the person will tend to see more the things and outcomes aligned to the person`s belief and will disregard the outcomes which are not in line with his or her belief so in this case the whole situation might be detrimental to the person.

There are other schools of thought which are scientifically based. Neuropsychology for example has also demonstrated the effects of expectations on actions and outcomes. In a study carried out by Dunovan *et al,* (2014) entitled "Prior probability and feature predictability interactively bias perceptual decisions" it was shown that "expectations bias decisions by modulating both the prior baseline and dynamic rate of evidence accumulation"In neuroscience neurotransmitters for the most part are the chemical messengers with which neurons in the human brain communicate with one another (Purves *et al,* 2001). According to Sathyanarayana Rao *et al* (2009), neurotransmitters could be termed the 'words' the brain uses to carry out the exchange of information occurring constantly, mediated by these molecular messengers. Beliefs affect these neurotransmitters. Research on neurotransmitters and how beliefs affect these neurotransmitters would be something worth pursuing.

Dr Bruce Lipton, a former medical school professor and research scientist in human stem cells was interviewed by Gustafson (2017). He states that beliefs affect our brain and have a direct effect on our health and body. He states that in our brain the beliefs are able to bring about a change in perception which brings about a change in the body`s biology. Dr Lipton also goes on to say that his research on stem cells got him to conclude that the human genetic activity is controlled by one`s environment and one`s perception of the environment.

Whichever school of taught one prefers to refer to, evidence is showing more that attitudes and beliefs in themselves are linked to better or worse clinical outcomes in a number of situations. This shows that pharmacists are also amongst the health professionals who need to reflect about this effect since anything improving clinical outcomes should be used to its maximum. Pharmacists should get more information about factors which

improve attitudes and beliefs in a patient and should leverage such factors. These include being warm and interacting in a better way with patients and being more optimistic about realistic possible outcomes in order to help the patient. Past experiences may also play an effect on the person`s attitudes and beliefs. Pharmacists should explore different necessary measures to help build up a number of achievable positive experiences following their input.

4.3 Health as perceived by the person

Health as perceived by the person did not seem to be affected by attitudes and beliefs towards community pharmacy services as well as belief in the pharmacist. This study showed that there was no statistically significant association between chronic health conditions and more positive attitudes and beliefs about community pharmacy services. These findings do not support the possibility that people might have better attitudes and beliefs because they need the help of pharmaceutical services more due to chronic health conditions. There is a possibility, however, that some people who said that they do not suffer from any chronic health condition are not aware of the possible presence of such health condition because they do not carry out the necessary medical tests and check-ups.

4.4 Evolution of community pharmacy services

The findings indicate that the majority of persons are very optimistic about community pharmacy services and the results they bring about indicate that such services should continue to evolve especially in the local settings. Continuation of evolution of services

helps to bring about a number of advantages to patients, some of which could be further explored also from the point-of-view of the opportunities presented today with information and artificial intelligence (Figure 4.2). Ten domains have been identified as opportunities for evolution:

i. **Reduced costs related to healthcare**. Various studies have shown that involving pharmacists in a number of healthcare services helps to bring about reduced healthcare costs (Chen *et al,* 2017; Tate, *et al,* 2018; Goode *et al,*2019). Malta is at a stage where the role of community pharmacist is evolving to formalise more and more the clinical input provided by the community pharmacist. This input contributes to improved health which in the long-term could contribute to reduced healthcare costs.

ii. Less utilization of health centres. Many people visit health centres when they need help with health-related problems. The increase and evolution involving utilization of the community pharmacy services to help treat minor ailments can help to reduce such utilization and thus give the medical practitioners more time to care for other more "serious" health problems. Most people gave a high rating for results with pharmacist OTC recommendation. This is important to show that results with pharmacist`s help can, in many cases be enough to solve minor health issues. As a future evolution, expansion of community pharmacists` interventions in supporting self-care pharmacotherapy contributes to streamlining utilization of health centres. Such examples include pharmacist prescribing for repeat medications and the access to emergency contraception products as a pharmacist-recommended product.

iii. **Less time wasted.** Utilization of pharmaceutical services reduces the time for the patient to access health services and improves efficiency in dedicating clinic times to patients who require access to physicians or secondary care service.

iv. **More adherence to medication and therefore reduction of problems brought about as a result of non-adherence.** This study showed that the people who said that they have more positive attitudes and beliefs about community pharmacy services and who believe more in the pharmacist`s help tended to have higher compliance scores. Pharmacists interventions have been linked to better adherence to medication in a number of studies carried out in other coutnries (Aljumah *et al*, 2015; Bajorek *et al*, 2016). Empowering of pharmacist intervention to monitor patient compliance contributes to better patient outcomes and less wastage of medicines.

v. **Availability of Pharmacists.** Having the community pharmacist more available for the patients would help to provide more time available in order to receive the necessary counselling and care. Inadequate time and availability by the community pharmacist has been reported to be a problem (Yang *et al*, 2016).

In Malta there are the highest ratio of pharmacists per population in the EU[19].

[18] Eurostat. Healthcare personnel statistics - dentists, pharmacists and physiotherapists [Internet]. Luxembourg: Eurostat; 2019 [cited 2020 May 10] available from URL: https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Healthcare_personnel_statistics__dentists,_pharmacists_and_physiotherapists&oldid=280119#Healthcare_personnel.

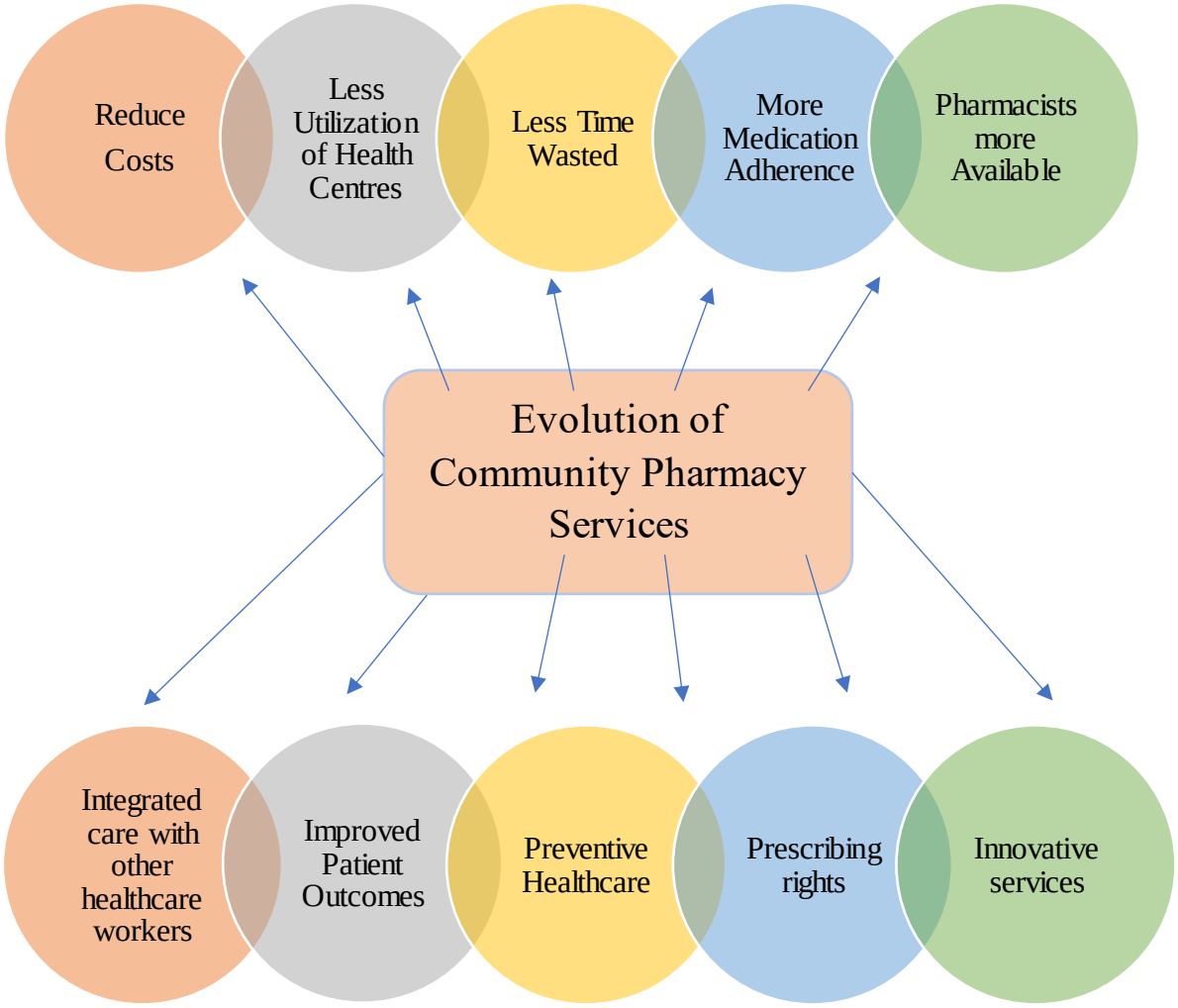

Figure 4.2: Positive impacts resulting from the evolution of community pharmacy services. Such impacts would provide enhanced patient care.

Pharmacists working locally should be available for patient care rather than to handle non-pharmaceutical activities or pharmacy administration. Certain measures such as more expansion of manpower duties to delegate stock management and dispensing should be taken within community pharmacy settings in order to have pharmacists more devoted to provide more patient care including patient education and support.

vi. **Integrated care with other healthcare workers.** In Malta we have a unique scenario where a number of clinicians hold their clinic in community pharmacies. This situation already provides a unique collaborative practice between the clinician and the pharmacists thereby providing a number of advantages for the patient.

Integrating more pharmacists in a number of other healthcare settings and with other healthcare workers would provide further advantages. Health services would benefit because authorities would integrate more pharmacists in healthcare and be involved more with other healthcare workers. It is recommended for healthcare authorities to recognize more the potential of community pharmacists when it comes to healthcare. The pharmacist is a highly knowledgeable healthcare professional and can serve as a drug information resource (Hassali *et al,* 2016). Although in Malta pharmacists are currently being integrated more in various health sectors and situations, there is much more that community pharmacists can do apart from what is being carried out. Healthcare systems which have integrated pharmacists have consistently been associated with improved outcomes for the patient.

Integrating more communication with other healthcare workers such as through electronic communication and access to patient profile would also provide a number of advantages to the patient. Such advantages would include better continuation of

care, reduction of drug interactions, optimization of treatment and individualised patient advice.

vii. **Improved patient outcomes.** The pharmacists' follow-up and opportunity by patients to discuss concerns or problems with medications are factors that support improved medication use. This includes helping to promote improved medication use and patient engagement and adherence, improved availability of medication and improved regular medication review.

viii. **Preventive healthcare and help to prevent chronic diseases.** A lot of diseases including chronic diseases bring about a lot of health problems in a population including increasing healthcare costs. A lot of diseases including cardiovascular diseases, obesity, diabetes, and some cancers are highly preventable. Community pharmacists are crucial in preventive healthcare measures and so can contribute to more optimal healthcare in the population.

ix. **Pharmacist prescribing.** In a number of countries, pharmacists are given prescribing rights (Bhatia *et al*, 2017; Habicht *et al*, 2017; Zhou *et al*, 2019). In Malta pharmacists have not been given any prescribing rights up to date. Implementation of some prescribing rights, possibly even in certain situations or with additional training and protocol can help reduce a lot of time for medical practitioners, help patients achieve faster outcomes and save on costs.

In a scoping review carried out by Zhou *et al*, 2019 in order to study barriers to pharmacist prescribing in the UK, New Zealand, Canada and Australia it was found that if pharmacists prescribing has to be implemented one has to ensure prescriber

competence and a socio-political context which is favorable to such pharmacist prescribing. It is important to focus on barriers present locally and carry out any changes needed to start working on pharmacists prescribing rights in order to optimize patient care. In a study carried out in Malta by Attard Pizzuto *et al* (2016) to investigate antibiotic practices among local medical practitioners and to assess their perception of potential antibiotic prescribing by pharmacists, it was found that medical practitioners who practice locally were not in favour of pharmacist prescribing rights. Some of the reasons included pharmacists not having access to patient medical records, lack of privacy and pharmacists not being qualified to examine the patient. Since these reasons are modifiable, accessing this information can help to carry out necessary changes in order to move towards implementation of having pharmacists prescribe locally.

The Pharmacy of Your Choice (POYC) scheme[19] in Malta is the system adopted by the national health service to distribute medicines for free through private community pharmacies. This system presents an opportunity to put to the forefront the potential of community pharmacists to act as co-ordinators with other healthcare professionals and support prescribing for chronic medications based on patient outcomes.

Within the POYC scheme, patients may obtain repeat prescriptions for six months without visiting the physician, they may also get prescriptions prepared by different prescribers with a risk of overlapping or interacting medications. The community

[19] Government of Malta. The Pharmacy Of Your Choice National Scheme [Internet]. Malta: Government of Malta; 2019 [cited 2019 Oct 20] available from URL: https://deputyprimeminister.gov.mt/en/poyc/Pages/Poyc-scheme.aspx.

pharmacist is acting as a safeguard to the patient to overcome challenges to patient safety within this prescribing practice. In a study carried out locally by Curmi (2017) where 2000 prescriptions presented in a community pharmacy were reviewed, 222 prescribing errors were intercepted by pharmacists thus showing how pharmacists can safeguard such prescribing errors from taking place. Formalising this intervention as pharmacist dependent prescribing is now the next step forward to substantiate this intervention, consolidate the beliefs and attitudes by patients and harmonise the national primary healthcare system. The COVID-19 pandemic has spurred changes in this context. In an effort to limit patients going to the primary care physicians for repeat prescriptions, pharmacists were empowered within this emergency situation to confirm repeat prescriptions for chronic medications dispensed through the POYC scheme. The advantages gained in this scenario should now be used to roll-out a pharmacist-prescribing process together with medicines review activities.

x. **More innovative services by pharmacists.** Community pharmacists can undertake other roles without waiting for the healthcare systems to change. There are so many ways pharmacists can become innovative. Such innovations include setting up of patient educational programmes, setting up of a collaborative healthcare team in the community pharmacy, carrying out home visits and carrying out point-of-care tests.

4.5 Suggestions for further studies

This research indicates the need for further studies.

i. Identifying the background of people who have negative attitudes and beliefs and who do not utilize pharmaceutical services

Since there was a small number of people with negative attitudes and beliefs, more studies utilizing larger number of people with such negative attitudes and beliefs and who do not utilize pharmaceutical services regularly should be carried out in order to get a better representative sample of this section of the population.

The purpose would be to understand more the reasons for such negative attitudes and beliefs and for not utilizing the services in order to try to make necessary improvement to possibly meet such people`s expectations towards pharmaceutical services.

ii. Understanding how attitudes and beliefs towards health services including pharmaceutical services affect outcomes.

The results brought about from these studies show that attitudes and beliefs may affect both utilization of health services as well as adherence to medication and clinical outcomes brought about due to OTC recommendations. More studies to measure how such attitudes and beliefs affect outcomes should be carried out in greater detail. Such studies should be more robust to include better measures on clinical outcomes and utilize other measures apart from patient-reported outcomes. They should include more detail on what affects attitudes and beliefs, different scales to measure attitudes and beliefs and larger groups of people with negative attitudes

and beliefs. They should also include more studies related to placebo and nocebo effects in order to get more information on any other factors which bring about better outcomes. Such other factors might include expectations of the patient on outcomes, behaviour and actions carried out by the patient, expectations that the healthcare professionals project onto the patient, past experiences of the patient, information the patient obtained from other sources and the state of the patient when starting treatment.

More systematic meta-analysis of studies involving such comparative analysis even when working with different healthcare providers and systems would lay the basis to help bring about more knowledge about such associations. This information would help to continue to enhance more information about factors which precipitate clinical outcomes.

iii. Identifying factors and interventions brought about by community pharmacists which affect attitudes and beliefs as well as outcomes.

Any factors and interventions brought about specifically by community pharmacists which help improve patient`s attitudes and beliefs as well as adherence to medication, quality of life and outcomes should continuously be studied. High quality studies carried out in the community pharmacy settings are of paramount importance since the main goal of treatment is improved outcomes.

iv. Association between more positive attitudes and beliefs towards community pharmacy services and health.

Since this study showed no association between more positive attitudes and beliefs about community pharmacy services and health as perceived by the person more studies of such associations should take place. Such studies might include once again other measures apart from patient-reported outcomes and more details on reasons for attitudes and beliefs. For this study most people did not give a reason for their answers and thus reasons for such answers were not given much importance and were not studied.

More detailed studies on the person`s lifestyle and other attitudes and beliefs which might affect health in general should also be carried out since the intention of such studies is always to obtain more knowledge about all possible factors leading to more optimal health.

v. Understanding the relationship between demographics and attitudes and beliefs and outcomes.

These studies showed that there were some statistically significant associations between attitudes and beliefs as well as utilization of services and demographics. More studies on such associations and possible reasons for such associations should continue to be studied in order to continue to improve more understandings on what factors affect attitudes and beliefs of people towards community pharmacy services.

4.6 Strengths and limitations of this study

The telephone survey was the first study having such a large sample number carried out in Malta to study information related to attitudes and beliefs about community pharmacy services as well as utilization of pharmaceutical services. The sample selected for this study was also the first one to be carried out by mobile phone using simple random sampling and thus could give a good representation of the people living in Malta. The second study which was carried out in community pharmacies and local councils provided very similar results when studying questions related to attitudes and beliefs towards community pharmacy services and utilization of these services to the ones answered in the telephone survey study. This indicated that the sample obtained from the pharmacy/local councils was similar to the random sample obtained by the telephone questionnaire and thus possibly provided a good representative sample of the people living in Malta as well.

Another strength of this study was that it could provide an important starting point on a subject which has not been investigated before in Malta – that is the comparative analysis between attitudes and beliefs related to pharmaceutical services and a number of outcomes. This study can be used as a basis to produce more robust studies to investigate such associations. There were three outcomes utilized to measure adherence. These were the total score obtained by the TAQ questionnaire which is a validated questionnaire, the question "Do you take your prescribed medicine" and the question "Do you ever miss a dose". When utilizing these three variables for this study the results brought about similar associations all of which were statistically significant. This also provided a strength for this study.

One of the limitations of this study was that the outcomes were patient-reported outcomes. Although patient-reported outcomes are at times easier to collect than other outcomes, can make it easier for people to accept to take part in the study and can "provide insight into the patients' experience with their care or a health service" (Weldring *et al*, 2013), different people can rate the same condition or same outcome differently. Cella *et al* (2015) explain that patient-reported outcome measures provide challenges in that they have not been widely used clinically and there is still a lack of information about the best set of questions to use in order to achieve a good measurement of healthcare organization performance and are therefore not always the ideal viable decision tools. In a systematic evaluation of patient-reported outcome protocol content and reporting in cancer trials it was noted that standards for patient-reported outcomes trial design and reporting vary and this threatens the endpoint validity of such outcomes (Kyte *et al,* 2019).

In this study most people suffering from chronic conditions gave a high rating to the control of such conditions. This was self-reported and might probably not have given the real picture of the actual control of the health condition. This might have produced a limitation.

Another limitation was the small number of people with negative attitudes and beliefs. Carrying out a research having larger numbers of people with negative attitudes and beliefs would help to overcome this limitation. Although this was a limitation, a number of comparative analysis still gave statistically significant results. The facts that the interviewer for the second study was a pharmacist and half of the people were interviewed in a pharmacy might have produced confounding factors since people interviewed might have shown more positive responses and avoided expressing negative responses. The positive responses given in the second survey however were close to the positive

responses given to the telephone interview thus showing that such a confounding factors might have not provided so much effect on the study.

4.7 Impacts of this study

This was the first study utilizing such a large sample number of people to assess attitudes and beliefs about community pharmacy services in Malta. The fact that the numbers were selected utilizing simple random sample by telephone calls for assessing attitudes and beliefs of patients provided a robust view of attitudes and beliefs of the Maltese population towards community pharmacy services.

This was the first study conducted in Malta to investigate the association between patient attitudes and beliefs about community pharmacy services and utilization of pharmaceutical services, health, clinical outcomes following pharmacist OTC recommendations and adherence to medication.

The study shed light that attitudes and beliefs about community pharmacy services in Malta are overall positive and there is a statistically significant association between more positive attitudes and beliefs and utilization of pharmaceutical services, clinical outcomes and adherence to medication. More robust studies to continue to investigate such associations in order to evaluate further such findings can lay the basis for further research in this field of patient-pharmacist relations.

4.8 Conclusion

This research demonstrated that overall people in Malta have positive attitudes and beliefs about community pharmacy services, that most people in Malta utilize the services regularly and that most people have positive outcomes as a result of OTC recommendations. It was shown that there was a statistically significant association between high positive attitudes and beliefs about community pharmacy services and outcomes. These outcomes were utilization of pharmaceutical services, results brought about by the pharmacist`s OTC recommendations as perceived by the person and adherence to medication.

Results obtained by this research can be utilized both locally and in international settings in order to be able to contribute to better understanding of factors which help to improve healthcare so as to meet the constantly evolving demands of the society. The study provides a testimonial of the contribution of community pharmacists to patient outcomes and is a good starting point to the evolvement of standardized innovative services such as pharmacist-led medicine review, expansion of pharmacist prescribing practices and point-of-care led patient monitoring, all within the context of integrated care.

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Appendices

Appendix 1

Ethics Approval

and

Consent Forms

Email showing Ethics Approval

Christabel Gauci <christabel.gauci@um.edu.mt> 28 Jun 2019, 15:16

to me

Dear Ms Parnis,

I hope this email finds you well.

I am sending you this email regarding your application.

Your UREC form clearly states in the beginning of the form that you have no self-assessment issues. As stated by UREC, in their procedures and on the form itself, if the researcher marks that there no self-assessment issues within their study, then FREC will not review the application. In order for you to proceed with your study, you need to provide me with further documentation you had told me you will forward and also the supervisor endorsement. Once this is done, you may begin your study. Any ethical and legal issues including data protection issues are your responsibility and that of the supervisor.

I thank you in advance.

Kind regards,

Christabel Gauci

University of Malta

Medical School,
Block A, Level 0,
Mater Dei Hospital
Tal-Qroqq, MSD 2090
Malta
Tel: (+00356) 2340 1891
E-Mail: christabel.gauci@um.edu.mt

Local Councillor Consent Form

Dear Local Councillor,

I am a second year Doctorate in Pharmacy student. As part of my studies I have just started working on my thesis entitled "Attitudes and Beliefs of Patients about Community Pharmacy Services". Part of my research involves interviewing 200 patients from different pharmacies and local councils across Malta.

I am writing this letter to ask if it is possible for you to give me your permission to be able to interview 20 people from your local council. Should it be possible to give me such permission would you kindly fill in the authorisation below?

I wish to inform you that all data will be solely used for the purpose of the study and will be destroyed once the study is completed. I also wish to assure you about the full confidentiality and anonymity about all data collected.

The research conducted together with the questionnaires will be compliant with the University of Malta ethical guidelines issued by the University Research Ethics Committee.

Should you wish to ask me any other questions you may send me an email on mariejparnis@hotmail.com.

Thanking you for your help and cooperation.
Best regards,
Marie Josette Parnis
B.Pharm(Hons) MSc(Agric Vet Pharm) Pharm D 2nd year student

Authorisation Section
Name _____
ID card No: _____
Council Location: _____

I am hereby authorising Ms Marie Josette Parnis ID 158070(M) to interview 20 patients from the local council in order to be able to pursue her studies entitled "Attitudes and Beliefs of Patients about Community Pharmacy Services". I understand that I can withdraw my consent any time. Access to the data concerning this interview is limited only to Ms Marie Josette Parnis, her academic/clinical study supervisors and anyone else involved in this research during the study duration. All data collected will be securely disposed of at the end of the study.

_____
Signature and date

Managing Pharmacist Consent Form

Dear Managing Pharmacist,

I am a second year Doctorate in Pharmacy student. As part of my studies I have just started working on my thesis entitled "Attitudes and Beliefs of Patients about Community Pharmacy Services". Part of my research involves interviewing 200 patients from different pharmacies and local councils across Malta.

I am writing this letter to ask if it is possible for you to give me your permission to be able to interview 20 people from your local council. Should it be possible to give me such permission would you kindly fill in the authorisation below?

I wish to inform you that all data will be solely used for the purpose of the study and will be destroyed once the study is completed. I also wish to assure you about the full confidentiality and anonymity about all data collected.

The research conducted together with the questionnaires will be compliant with the University of Malta ethical guidelines issued by the University Research Ethics Committee.

Should you wish to ask me any other questions you may send me an email on mariejparnis@hotmail.com.

Thanking you for your help and cooperation.

Best regards,
Marie Josette Parnis
B.Pharm(Hons) MSc(Agric Vet Pharm) Pharm D 2nd year student

Authorisation Section
Name:_____
ID card No:_____
Pharmacy _____

I am hereby authorising Ms Marie Josette Parnis ID 158070(M) to interview 20 patients from the local council in order to be able to pursue her studies entitled "Attitudes and Beliefs of Patients about community Pharmacy services". I understand that I can withdraw my consent any time. Access to the data concerning this interview is limited only to Ms Marie Josette Parnis, her academic/clinical study supervisors and anyone else involved in this research during the study duration. All data collected will be securely disposed of at the end of the study.

_____

Signature and date

Information for the interveiwee

Dear Sir/Madam,

I am a second year Doctorate in Pharmacy student. As part of my thesis entitiled "Attitudes and Beliefs of Patients about Community Pharmacy Services" I have to interview 200 people from different localities across Malta.

My interview consists of 4 parts: The frst part of the questionnaire wll assess the person`s demographics. The second part of the questionnaire will assess the person`s attitudes and beliefs about community pharmacy services and reasons for such attitudes and beliefs. The third part will assess the person`s compliance to medication. The fourth part will assess some selected clinical outcomes as perceived by the patient.

I would like to inform you that all data will be solely used for the purpose of the study and will be destroyed once the study is completed. I also wish to inform you about the full confidentiality and anonymity of all data collected. Under the General Data Protection Regulation (GDPR) and national legislation that implements and further specifies the relevant provisions of the said Regulation, I have the right to obtain access to, rectify, and where applicable ask for the data concerning me to be erased.

The research conducted together with the questionnaires will be compliant with the University of Malta ethical guidelines issued by the University Research Ethics Committee. Should you wish to ask me any further questions about my studies you are free to do so anytime.

Considering the above, if you would like to participate in the study, would you like to read and sign the consent form?

Thank you very much.

Marie Josette Parnis

B.Pharm(Hons), MSc (Agric Vet Pharm)

2nd Year Doctorate in Pharmacy Student

Informazzjoni lill-intervistat

Għażiż Sinjur/a,

Jiena studenta fit-tieni sena fid-Dottorat għall-Farmaċija. Bħala parti mit-teżi tiegħi, bl- isem ta' 'Attitudnijiet u Twemmin tal-Pazjenti dwar is-Servizzi tal-Ispiżeriji fil-Komunità', għandi bżonn nintervista 200 persuna minn lokalitajiet differenti minn madwar Malta.

L-intervista tiegħi hi maqsuma f'erba' (4) taqsimiet: L-ewwel parti tal-kwestjonarju se tivvaluta d-demografija tal-persuna. It-tieni parti tal-kwestjonarju se tivvaluta l- attitudnijiet u t-twemmin dwar is-servizzi tal-ispiżeriji fil-komunità u r-raġunijiet għalihom. It-tielet parti mbagħad se tivvaluta kemm il-persuna qiegħda tieħu l-medicina kif suppost. U fl-aħħar, ir-raba' parti se tivvaluta ċerti riżultati kliniċi.

Irrid ninformak li kull informazzjoni se tkun użata BISS għall-istudji tat-teżi tiegħi u jiġi kkanċellat kollox ladarba x-xogħol ikun lest. Nixtieq nassigurak ukoll li kull informazzjoni miġbura se tinżamm strettament kunfidenzjali u anonima.

Ir-riċerka, kif ukoll il-kwestjonarji, se jkunu konformi mal-linji gwida dwar l-etika tal- Università ta' Malta maħruġa mill-Kumitat dwar ir-Riċerka u l-Etika tal-Università. Jekk ikollok bżonn tistaqsini xi ħaġa dwar l-istudji tiegħi, tiddejjaqx tagħmel dan. Wara li qrajt dan kollu, jekk tixtieq tipparteċipa f'din ir-riċerka, tħossok komdu/a li taqra u tiffirma l- formola tal-kunsens?

Grazzi ħafna.

Marie Josette Parnis
B.Pharm (Hons.), MSc (AgricVetPharm)
Studenta tat-Tieni Sena fid-Dottorat għall-Farmaċija

Patient Consent Form

I am a Maltese citizen and I am over eighteen (18) years of age. I have been asked to participate in a research study entitled "Attitudes and Beliefs of Patients about Community Pharmacy Services".

The purpose and details of the study have been explained to me by Ms Marie Josette Parnis and any difficulties which I have raised have been adequately clarified. I give my consent to MPs Marie Josette Parnis to make the applicable observations. I am aware of any inconveniences which this may cause.

I understand that the results of this study in which I am participating may be used for medical or scientific purposes and that the results of this study may be reported/published. However, I shall not be personally identified in any way, either individually or collectively, without my expressing written permission. Under the General Data Protection Regulation (GDPR) and national legislation that implements and further specifies the relevant provisions of the said Regulation, I have the right to obtain access to, rectify, and where applicable ask for the data concerning me to be erased.

I am under no obligation to participate in this study and am doing so voluntarily. I may withdraw from the study at any time, without giving any reason.

Access to my patient records is limited to Ms Marie Josette Parnis, the academic/clinical study supervisors, and the medical team for the study duration, and all data collected will be securely disposed of at end of the study.

I am not receiving any remuneration for participating in this study.

In case of queries during the study I may contact: Ms Marie Josette Parnis on mobile number 77055937

Signature of participant _____

Name of participant _____

Signature of Principal Investigator _____

Name of Principal Investigator _____

Email of Principal Investigator _____

Contact number of Principal Investigator _____

Name of Principal Supervisor _____

Email of Principal Supervisor _____

Patient Code _____

Date _____

Formola tal-Kunsens tal-Pazjent

Jiena ċittadina Maltja u għandi ‘l fuq minn 18-il sena.

Ġejt mitluba sabiex nipparteċipa f’riċerka ta’ studju bl-isem ta’ ‘Attitudnijiet u Twemmin ta’ Pazjenti dwar is-Servizzi tal-Ispiżeriji fil-Komunità’.

L-iskop u d-dettalji ta’ dan l-istudji ġew spjegati lili mis-Sa Marie Josette Parnis u kwalunkwe diffikultà li jiena kelli ġiet iċċarata u spjegata tajjeb ħafna.

Jiena b’hekk nagħti l-kunsens tiegħi lis-Sa Marie Josette Parnis sabiex tuża l-informazzjoni mogħtija f’din l-intervista għall-iskop ewlieni ta’ din ir-riċerka biex b’hekk tkun tista’ tiġi rrapportata kif ukoll ippubblikata. Madankollu ma nistax niġi identifikat/a b’xi mod jew ieħor. Inżomm id-dritt li nħassar kwalunkwe data li tista’ tikkonċerna lili meta rrid. M’għandi ebda obbligazzjoni li nipparteċipa f’dan l-istudju u qiegħed/qiegħda nagħmel hekk b’mod volontarju u minn jeddi.

L-aċċess għad-data waqt din l-intervista u li tikkonċerna lili huwa permess biss u esklussivament lis-Sa Marie Josette Parnis, is-superviżuri akkademiċi jew kliniċi tagħha, jew kwalunkwe persuna oħra relatata ma’ din ir-riċerka matul l-istudji tagħha. Kull data miġbura għandha titneħħa b’mod responsabbli fl-aħħar tal-istudji tas-Sa Marie Josette Parnis. Taħt il-protezzjoni tad-*data* u leġislazzjoni nazzjonali li jimplimentaw u jispecifikaw il-proviżjonijiet relevanti ta` regolamenti issettjati, jiena għandi d-dritt li jkolli aċċess, li nirranġa, u fejn applikabbli nistaqsi biex id-*data* relatata miegħi tiġi mħassra.

Niddikjara li ma jien nirċievi ebda ħlas talli qiegħed/qiegħda nipparteċipa f’dan l-istudju.

Għal kwalunkwe mistoqsija li tikkonċerna dan l-istudju jiena nista’ nikkuntattja lis-Sa Marie Josette Parnis fuq in-numru 77055937.

Isem tal-Participant/a _____

Firma tal-Participant/a _____

Isem tal-Investigatur _____

Firma tal-Investigatur _____

Data _____

Kodiċi tal-Pazjent/a _____

Isem tas-Superviżur Prinċipali _____

Email of Superviżur Prinċipali _____

Appendix 2

Telephone Patient Questionnaire

(English and Maltese versions)

Telephone Questionnaire

Gender. M/F

Age: _____

Education: _____

Overall how do you rate the following?

	Strongly agree	**Agree**	**Do Not know**	**Disagree**	**Strongly disagree**
I believe and trust that the pharmacist can help me with minor help problems.					
I believe and trust that my pharmacist is an important healthcare provider for my general health concerns.					
I often make use of the pharmaceutical services offered by the pharmacist for minor ailments, over the counter medication, health advice and guidance and general medication use.					

What are your reasons for the above? Would you like to add anything else?

_____

_____

_____

Kwestjonarju tat-telefown

Sess: M/F

Età: _____

Livell ta' Edukazzjoni: _____

Għid kif taħsibha dwar dan li ġej:

	Naqbel ħafna	**Naqbel**	**Ma nafx**	**Ma naqbilx**	**Ma naqbilx assolutament**
Nemmen u nafda li l-ispiżjar jista' jgħinni fi problemi żgħar.					
Nemmen li l- ispiżjar huwa fornitur importanti dwar is-saħħa u b' hekk jista' jgħinni f'xi tħassib ġenerali dwar saħħti.					
Spiss nuża s-servizzi offruti mill- ispiżjar għal mard ħafif, mediċina mingħajr riċetta, parir dwar is-saħħa u gwida fuq l-użu tal-mediċina.					

X'inhuma r-raġunijiet tiegħek talli weġibt kif weġibt? Tixtieq iżżid xi ħaġa oħra?

_____

_____

_____

Appendix 3

Pharmacy/Local Council Questionnaire

(English and Maltese Versions)

Pharmacy/Local Council Patient Questionnaire

Section A: Patient Demographics

Gender: _____

Age: _____

Education: _____

Section B: Attitudes and beliefs

How do you rate the following?

	Strongly Agree	Agree	Do not know	Disagree	Strongly Disagree
I believe the pharmacist is highly knowledgeable about health and health problems in general. **Reason**: _____ _____ _____					
I believe the pharmacist is an expert in medicines. **Reason**: _____ _____ _____					
Overall I have had positive experiences with community pharmacy services. **Reason**: _____ _____ _____					

Overall I have positive attitudes and beliefs about community pharmacy services. **Reason**: _____ _____ _____					
Overall I follow the pharmacist's advice for my general health problems. **Reason**: _____ _____ _____					
Overall I believe that the pharmacist's help is one of the factors which helps me achieve better clinical outcomes. **Reason**: _____ _____ _____					
Overall I often make use of the services provided by pharmacists. **Reason**: _____ _____ _____					

Section C: Clinical Outcomes

How do you rate your health status from 1 to 5? Number 1 indicating the **worst** health status and number 5 indicating the **best** health status.

1	2	3	4	5

How do you rate your overall results with Pharmacists over the counter recommendations for minor ailments from 1 to 5? Number 1 indicating the **worst** outcome and number 5 indicating the **best** outcome.

1	2	3	4	5

Do you suffer from any chronic condition? If yes how do you rate its control from 1 to 5? Number 1 indicating the **worst** possible outcome and number 5 indicating the **best** possible outcome.

Condition	Present/Absent	Perception of control				
		1	2	3	4	5
High Blood Pressure						
Diabetes						
Hypothyroidism						
High Blood Cholesterol						
Heart Problems						
Other Conditions: _____						

Patient Reference Number

Part A and Part B include questions on medicine use, compliance and the effect on the patient. After each question, circle the 0, 1, 2, 3, 4 or 5 depending on your selected answer. The maximum total score (Part A + Part B) is equal to 100. High adherence is shown by a high score.

Part A:	**Never**	**Rarely**	**Occasionally**	**Some times**	**Always**
1. Do you feel you need to understand your condition more clearly?	0	1	2	3	5
2. Do you feel you need to understand your treatment more clearly?	0	1	2	3	5
3. Do you have anyone to assist your daily needs with the management of your condition?	0	1	2	3	5
4. Do you obtain your medicines for free?	0	1	2	3	5
5. If any of your medicines are not available for free, do you agree to buy them?	0	1	2	3	5
6. When buying non-prescription medicines from the pharmacy, do you check if they can cause any interactions with the prescribed medicines?	0	1	2	3	5
7. Do you take your prescribed medicines?	0	1	2	3	5
8. Do you take your medicines at their prescribed times?	0	1	2	3	5
9. If you travel abroad, do you take along your medicines?	0	1	2	3	5
10. When you go abroad do you take along with you the relevant documents containing information on your prescribed medicines?	0	1	2	3	5
A:High score indicates high adherence				**Score: 50**	

Patient Reference Number

Part B:	Never	Rarely	Occasionally	Some times	Often	Always
1. Were there any occasions were you stopped taking your medicine out of your own free will?	5	4	3	2	1	0
2. Did you ever miss a dose?	5	4	3	2	1	0
3. Did you miss / stop treatment, because you:						
i. Forgot?	5	4	3	2	1	0
ii. Experienced adverse effects?	5	4	3	2	1	0
iii. Did not collect your medicine on time?	5	4	3	2	1	0
iv. Have too many medicines and you got confused on how they should be administered?	5	4	3	2	1	0
v. Did not understand why you are taking the said medicine and the effect it has on you?	5	4	3	2	1	0
vi. Were concerned after reading the 'Patient Information Leaflet'?	5	4	3	2	1	0
vii. Needed expensive medicine?	5	4	3	2	1	0
viii. Felt good and decided that you did not need the medicine?	5	4	3	2	1	0

B:High score indicates high adherence **Score: 50**

Kwestjonarju tal-Ispiżerija/Kunsill Lokali

Sezzjoni A: Demografija tal-Pazjent

Sess: _____

Età: _____

Livell ta' Educkazzjoni: _____

Sezzjoni B: Attitudnijiet u Twemmin

X'taħseb dwar dan li ġej?

	Naqbel ħafna	**Naqbel**	**Ma nafx**	**Ma naqbilx**	**Ma naqbilx assolutament**
Nemmen li l-ispiżjar/a j/tifhem sew dwar is-saħħa u l-problemi tas-saħħa b'mod ġenerali. Raġuni:_____ _____ _____					
Nemmen li l-ispiżjar/a huwa/hija espert/a fil-mediċini. Raġuni:_____ _____ _____					
Nista; ngħid li b'mod ġenerali, kelli esperjenzi pożittivi bis-servizzi tal-ispiżerija fil-komiunità. Raġuni: _____ _____ _____					

Nista' ngħid li b'mod ġenerali għandi attitudnijiet u twemmin pożittivi dwar is-servizzi tal-ispiżerija fil-komunità. Raġuni: _____ _____ _____					
Jiena nisma' mill-parir tal-ispiżjar/a dwar il-problemi ta' saħħti b'mod ġenerali. Raġuni: _____ _____ _____					
Nemmen b'mod ġenerali li l-għajnuna ta l-ispiżjar/a hija fattur importanti biex nikseb riżultati kliniċi aħjar. Raġuni: _____ _____ _____					
Jiena nagħmel użu mis-serviżżi li jipprovdu l-ispiżjara ta' spiss. Raġuni: _____ _____ _____					

Sezzjoni Ċ: Riżultati Kliniċi

1. X'taħseb dwar l-istat (kundizzjoni) ta' saħħtek minn numru 1 sa 5? In-numru 1 jindika **l-agħar** stat ta' saħħa filwaqt li n-numru 5 jindika **l-aqwa** stat ta' saħħtek.

1	2	3	4	5

2. X'taħseb dwar ir-riżultati tiegħek b'mod ġenerali skont ir-rakkomandazzjonijiet tal-Ispiżjara OTC fir-rigward ta' mard ħafif minn 1 sa 5? In-numru 1 jindika **l-agħar** riżultat filwaqt li n-numru 5 jindika **l-aqwa** riżultat.

1	2	3	4	5

3. Inti tbati minn xi kundizzjoni kronika? Jekk iva, kif tikklassifika l-kontroll tagħha minn 1 sa 5? In-numru 1 jindika **l-agħar** riżultat possibbli filwaqt li n-numru 5 jindika **l-aqwa** riżultat possibbli.

Kundizzjoni	**Preżenti/ Assenti**	**Perċezzjoni ta' Kontroll**				
		1	2	3	4	5
Pressjoni Għolja						
Dijabete						
Ipotirojdiżmu						
Kolesterol Għoli fid-Demm						
Problemi tal-Qalb						
Problemi oħra _____						

Numru tar-riferenza tal-pazjent

Taqsima A u Taqsima B jinkludu mistoqsijiet li qegħdin janalizzaw it-teħid tal-mediċina u l-effett fuq il- pazjent. Fejn kull mistoqsija, għamel ċirku madwar wieħed min-numri 0, 1, 2, 3, 4 jew 5 skont t- tweġiba li tagħżel. It-total massimu (Taqsima A + Taqsima B) huwa ta' mija (100). Skor għoli juri li l- pazjent qiegħed jipparteċipa b'mod attiv fit-trattament tiegħu għax jemmen li jagħmillu tajjeb skont ir- rikommandazzjoni tal-kliniku.

Taqsima A:	**Qatt**	**Rari**	**Xi Kultant**	**Ftit drabi**	**Ħafna drabi**	**Dejjem**
1. Tinforma ruħek biżżejjed fuq il-kundizzjoni tiegħek?	0	1	2	3	4	5
2. Tinforma ruħek biżżejjed fuq il-mediċina li qiegħed/qegħda tieħu?	0	1	2	3	4	5
3. Għandek lil xi ħadd li jgħinek fil-bżonnijiet tiegħek ta' kuljum fil- kura tal-kundizzjoni tiegħek?	0	1	2	3	4	5
4. Kien hemm drabi fejn int kont intitolat/a għall-mediċina b'xejn?	0	1	2	3	4	5
5. Jekk xi mediċina preskritta lilek, ma tingħatax b'xejn, int tixtriha?	0	1	2	3	4	5
6. Meta tixtri mediċina mill-ispiżerija mingħajr riċetta tat-tabib, tiċċejka jekk tistax teħodha mal-mediċina preskritta?	0	1	2	3	4	5
7. Il-mediċina preskritta teħodha?	0	1	2	3	4	5
8. Il-mediċina teħodha fil-ħinijiet stipulati?	0	1	2	3	4	5
9. Meta ssiefer tieħu l-mediċina miegħek?	0	1	2	3	4	5
10. Meta ssiefer tieħu miegħek d-dokumenti ta' tagħrif fuq il- mediċina li qiegħed/qegħda tieħu?	0	1	2	3	4	5
A: Skor għoli jfisser li t-teħid tal-mediċina huwa adekwat u effettiv fuq il-pazjent						***Skor: 50***

Numru tar-riferenza tal-pazjent

Taqsima B:	**Qatt**	**Rari**	**Xi Kultant**	**Ftit drabi**	**Ħafna drabi**	**Dejjem**
1. Kien hemm xi drabi fejn waqqaft mediċina minn jheddek?	5	4	3	2	1	0
2. Kien hemm xi drabi fejn qabbiżt xi doża?	5	4	3	2	1	0
3. Qabbiżt doża u/jew waqqaft mediċina għax:						
i. Insejt?	5	4	3	2	1	0
ii. Tgħamillek id-deni?	5	4	3	2	1	0
iii. Il-mediċina spiċċat u ma lħaqtx ġibt iktar?	5	4	3	2	1	0
iv. Hemm wisq mediċini u titgerfex kif trid teħodhom?	5	4	3	2	1	0
v. Ma tifhimx għaliex qiegħed/qegħda tieħu l-mediċina u x'effett għandha fuq il-ġisem tiegħek?	5	4	3	2	1	0
vi. L-informazzjoni fuq il-mediċina li taqra fuq il-'Patient Information Leaflet' tbezzgħak?	5	4	3	2	1	0
vii. Trid tixtri l-mediċina u tiswa ħafna?	5	4	3	2	1	0
viii. Thossok tajjeb/tajba u għalhekk tiddeċiedi li ma hemmx bżonn li tieħu l-mediċina?	5	4	3	2	1	0
B: Skor għoli jfisser li t-teħid tal-mediċina huwa adekwat u effettiv fuq il-pazjent Skor: 50						