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Identifying pharmacist's [i.e., pharmacists'] perception, knowledge and perceived barriers towards providing care to patients taking antipsychotics

Neha Gangal
The University of Toledo

A Thesis

entitled

Identifying Pharmacist's Perception, Knowledge and Perceived Barriers towards

providing care to Patients taking Antipsychotics.

by

Neha Gangal

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Master of Science Degree in Pharmaceutical Sciences

_____
Dr. Monica Holiday-Goodman, Committee Chair

_____
Dr. Varun Vaidya, Committee Member

_____
Prof. Robert Bechtol, Committee Member

_____
Dr. Patricia R. Komuniecki, Dean
College of Graduate Studies

The University of Toledo

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An Abstract of

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The role of community pharmacists has expanded from the traditional tasks of dispensing medications to working with other health professionals and the public in a patient-centered model of practice. However, in relation to mental health, the pharmacists' role is still evolving. Pharmacists have the potential to improve the quality of mental health care, and outcomes by enhancing adherence, adjustment of medications and monitoring and managing adverse effects. The World Health Organization (WHO) acknowledged pharmacists as dynamic members of mental health care teams. Despite having a great potential to provide appropriate care to the patients, concerns are raised that the medication-related needs of people with mental illness are not adequately met in pharmacies. People with mental illness may receive less attention from pharmacists than others. To motivate pharmacists to provide additional care to mental health patients, it is important to know the perceptions of pharmacists towards mental health patients and towards providing counseling to them.

In this study the modified Theory of Planned Behavior was used to assess knowledge, attitude, self-efficacy, subjective norm and intention of Ohio pharmacist regarding the provision of care to patients taking antipsychotics. The study involved developing a valid and reliable survey, which was sent to 2500 pharmacists licensed and working in Ohio using the online software 'SurveyMonkey'. A total of 240 surveys were included in the analysis. It was found that the modified model of Theory of Planned Behavior was useful in predicting intention of pharmacists to provide counseling services but may require some modifications for future studies

Our results show that around 95% of the respondents had positive attitudes towards providing additional care to mental health patients. Approximately 89% had positive subjective norms. Pharmacists felt motivated to provide counseling depending on physicians' desire and patients' needs. Almost 68% had high perceived self-efficacy in providing care to patients taking antipsychotics. Around 90% of pharmacists intended to provide additional care to patients taking antipsychotics. Descriptive statistics showed that only 20% of pharmacists had high scores on the knowledge section (40% or higher points). Regression showed that the factors which significantly predicted intention to counsel were attitude ($\beta = 0.188$; $p<0.05$) and subjective norm ($\beta = 0.144$; $p<0.05$). Logistic regression showed that none of the demographic variables predicted attitude of pharmacist towards providing counseling to mental health patients. Lack of time to offer individual attention and lack of knowledge were the top two barriers perceived by 90% and 80% of the pharmacists respectively.

Overall results showed that pharmacists had a positive attitude and strong intention towards providing additional care to mental health patients. A majority of

pharmacists surveyed showed limited knowledge on seven questions related to the proper use of antipsychotics. Therefore, it is important to enhance knowledge among pharmacists on appropriate use of antipsychotics. Continuing education programs could be helpful to pharmacists in this process.

I dedicate my thesis

To my parents for their endless love and support….

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Chapter One

Introduction

Mental and behavioral disorders account for 12% of the global burden of disease. The World Health Organization (WHO) estimates more than 450 million people across the globe suffer from mental illnesses.[1] Mental disorders are the leading cause of disability in the United States and Canada.[2] One in four adults, approximately 57.7 million Americans experience a mental health disorder in any given year.[3] In 2008, 13.4 % of the adults in the United States received treatment for mental health problems. Around 22.6% of the US population suffers from bipolar disorder while 1.1% suffers from schizophrenia.[4] The World Health Organization reported that four of ten leading causes of disability in the US and other developed countries are mental disorders, and by 2020 major depressive illness will be the leading cause of disability in the world for women and children. [1]

According to the WHO (World Health Organization), mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community".[1] WHO stresses that mental health "is not just the absence of a mental disorder".[1]

Mental health refers to cognitive, and/or emotional wellbeing - it is all about the way we think feel and behave. It also includes a person's ability to enjoy life, to gain a balance between life activities and efforts to achieve psychological resilience.

Mental disorder or mental illness is a term used for a wide range of disorders. Serious mental illnesses include major depression, schizophrenia, bipolar disorder,

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obsessive compulsive disorder, panic disorder, post-traumatic stress disorder and borderline personality disorder. Major mental illnesses have symptoms that are periodic and in between these periods a person can lead a relatively normal life. These disorders can affect a person of any age or race and are not a result of personal weakness, lack of character or poor upbringing. WHO believes that with proper care, psychosocial assistance and medication, millions could be treated for mental disorders, prevented from suicides and can lead a normal life even in resource-limited settings.[1]

A mental illness, like chronic illnesses, requires ongoing treatment. Many mental conditions can be effectively treated with individual or a combination of therapies like medication, psychotherapy, group therapy, day treatment or partial hospital treatment, and with specific therapies, such as cognitive-behavior therapy and behavior modification.

Several psychiatric medications are available today for improving the symptoms but they don't cure mental illness. Some of the commonly used classes of medications are antidepressant medications, mood-stabilizing medications, anti-anxiety medications and antipsychotic medications. These medications can also help make other treatments such as psychotherapy, more effective.[5]

Most treatment methods for mental health disorders can be categorized as either somatic or psychotherapeutic. Somatic treatments include drug therapy and electroconvulsive therapy. Psychotherapeutic treatments include individual, group, or family and marital psychotherapy, behavior therapy techniques (such as relaxation training or exposure therapy), and hypnotherapy. Research suggests that for major mental health disorders, a treatment approach involving both drugs and psychotherapy is more

effective than any individual treatment method used. The particular treatment regimen chosen depends on the particular mental illness, its severity and a person's life situation. Often a team approach is appropriate to make sure that all of the psychiatric, medical and social needs are met.

Although there is great availability of therapies and medications, a major concern with these patients is medication non adherence. In terms of schizophrenia, systematic reviews have shown that 40–50% of patients are non-adherent with antipsychotics.[6] Non-adherent behavior includes failure to take any medication, premature termination of a medication and taking lower or higher doses than prescribed. Non-adherence may be deliberate (e.g., due to adverse side effects) or accidental (e.g., due to forgetting). Non adherence to medications other than psychiatric medication also increases with the presence of psychiatric disorders. A study showed that 70.8% of patients had low adherence level to psychopharmacological treatment.[7] Moreover, only twenty-one patients knew what their diagnosis was and most did not know or partially knew the name and dose of all prescribed medications.[7] This shows that a low level of knowledge regarding the disease and treatment could be a factor affecting medication non adherence.

Pharmacists can play a pivotal role in providing counseling to mental health patients which will help patients in increasing their knowledge level. In recent times, the role of community pharmacists has expanded from the traditional tasks of dispensing medications to working with other health professionals and the public in a patient-centered model of practice.[8] However in relation to mental health, the pharmacists' role is still evolving.

Pharmacists have the potential to improve the quality of mental health care and outcomes by enhancing adherence, adjustment of medications and monitoring and managing adverse effects.[9] The World Health Organization (WHO) acknowledged pharmacists as dynamic members of mental health care teams.[10] Despite having a great potential to provide top notch care to patients, concerns are raised that the medication-related needs of people with mental illness are not adequately met in pharmacies. People with mental illness may receive less attention from pharmacists than others.[11] To motivate pharmacists to provide additional care to mental health patients it is important to know the perceptions of pharmacists towards mental health patients and towards providing counseling to them.

Theory of Planned Behavior (TPB) can be used to determine the perceptions of pharmacists towards mental health patients and towards providing counseling to them. It has been shown that TPB is a good theory for predicting intention of healthcare professionals and is widely used to study perceptions across a diverse range of behaviors.[12] The Theory of Planned Behavior hypothesizes that an individual's perception towards a behavior can be predicted by the intention construct, which in turn is influenced by attitudes, subjective norms, and perceived behavioral control towards the behavior.[13]
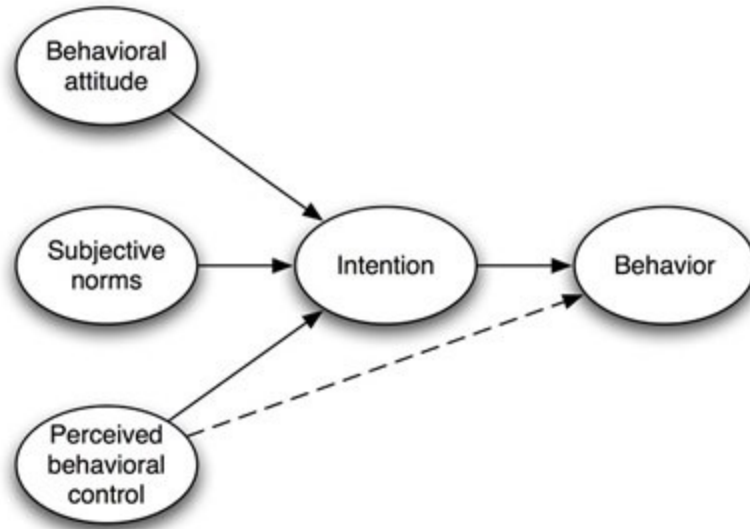
Figure 1: *Ajzen's Theory of Planned Behavior model*

According to the Theory of Planned Behavior, attitude towards a particular behavior is explained as a person's positive or negative evaluation of self-performance of a particular behavior[13]. Subjective norm is defined as an individual's perception of social normative pressures, or relevant others' beliefs that he/she should or should not perform such behavior. It thus, comprises of normative beliefs with the expectations of the important referents. Perceived behavioral control can be explained as an individual's perceived ease or difficulty of performing a particular behavior. It is assumed that the perceived behavioral control is determined by the total set of accessible control beliefs linking the behavior to various outcomes.[13] According to Ajzen, additional variables could also be included in the TPB model, which makes it a modified TPB.[14] Hence, knowledge can be included as a construct in the TPB model. It could be hypothesized that there is a direct positive relationship between knowledge, self-efficacy and intention, which means that the more knowledgeable a person is and the more confident he is about

his ability to perform a behavior, the greater his intention towards a particular behavior. It could also be hypothesized that knowledge could individually predict intention, i.e. the more knowledgeable a person is, the more positive is his/her intent to perform a behavior.

1.1 Need For The Study:

Research shows that persons with severe or chronic physical illnesses often have co-existing mental health problems. At the same time, persons with severe mental illnesses or substance abuse disorders may have physical health problems that remain undetected or untreated.15 Inequalities in health services delivery and utilization for people with mental illness have been demonstrated repeatedly.16 Poorer outcomes for this population in regard to general health, such as circulatory diseases, mortality from natural causes, and access to interventions (including medications), are well documented.16 This situation, combined with the reality that there is still a stigma associated with mental illness shows the need for integration of other health care providers.

There are many accessible community pharmacists, and they have the potential to contribute to improved health outcomes for people with mental illnesses through patient-centered, collaborative, preventive, and treatment services.16 To improve pharmacist participation in care for mentally-ill patients, there is a need to understand their attitude towards these patients and barriers that are limiting their services.

1.2 Significance:

Even though this area of study has been explored internationally, especially in the United Kingdom, it is very scarcely analyzed in the United States. The results of this

study will bring to light pharmacists' perception of mentally ill patients and providing care to them. Studies that are done internationally show discrepancies in the results. A few studies have showed that pharmacists who have positive attitudes towards these patients still need more training to efficiently counsel them, while other studies show that pharmacists have a stigma towards these patients and are not very comfortable working with them.

The study hopes to gather more information not only on the attitudes of pharmacists towards these patients and providing additional care to them, but will also demonstrate if their perceptions are affected by various factors such as their knowledge, age, gender, practice setting, number of years of practice.

The study will be a contribution to the limited and scattered literature on attitudes of pharmacists towards mentally ill patients and towards providing additional care to them. The findings of this study may suggest that there is a need to improve pharmacy curricula or promote continuing education in this particular area of psychotropic medications and will serve as a stepping-stone for further improvement.

1.3 Goal

To identify Ohio pharmacists' perception, knowledge and perceived barriers towards providing care to patients taking antipsychotics.

1.4 Objectives

1. To determine attitude, subjective norm, self-efficacy and intention of pharmacists towards providing additional care to patients taking antipsychotics.

2. To determine pharmacists' knowledge of antipsychotics.

3. To determine the relationship of knowledge, attitude, subjective norm and self-efficacy with intention.

4. To determine the relationship between knowledge and self-efficacy.

5. To determine if attitude, subjective norm, self-efficacy, and knowledge together predicted intention of pharmacists to provide additional care to patients taking antipsychotic medications.

6. To determine if demographics predict attitude of pharmacists towards providing care to patients with mental disorder.

7. To determine the barriers pharmacists face in providing additional care to patients taking anti-psychotics.

Chapter Two

Literature Review

This chapter gives an overview of the literature related to the study. It is divided into the following sections:

- Attitude of general public and health care professionals towards mental illness

- Patients' attitude towards health care providers and current care

- Pharmacists' attitude towards mental illness

- Future care

- Theoretical Framework: Theory of Planned Behavior

2.1 Attitude of general public and health care professionals towards mental illness:

It is commonly reported that the general population has negative attitudes towards mental illness.[15] Of the negative attributes attached to people with mental disorders the most prevalent one appears to be that they are unpredictable.[16] A majority of the public sees people with mental illness to be in need of help and dependent on others.[16] Others tend to have social distance toward people with mental illness, and generally perceive them as dangerous, difficult to talk to, or weak.[15] Older age, less familiarity with mental illness, and lower educational level increases the negative attitude towards mentally ill patients.[15] Even health professionals are affected by such negative attitudes.[15] Although health professionals and general practitioners have better knowledge of mental health disorders, they possess similar stereotypical attitude as the general public and at times are reluctant to work closely with their patients.[15]

2.2 Patients' attitude towards health care providers and current care

According to research, patients with mental illness feel that healthcare professionals' attitude is an important factor in their care and in recovery.[15] Mental health patients want these health care professionals to understand and validate problems, support them, and convey hope.[15] The negative attitudes of general public and health care professionals are often experienced by patients as stigma. They add to their isolation and distress, and affects help seeking, adherence, self-esteem, and recovery negatively.[15]

Medication counseling provided by community pharmacists serves as a very good source of medication information for patients and their caregivers, but concerns are raised that the medication-related needs of people with mental illness are not adequately met in pharmacies.[11] One study reported that patients were not provided with any information about their current medication, including potential side effects. [17]

2.3 Pharmacists' attitude towards mental illness:

Despite pharmacists being among the most accessible and frequently consulted healthcare professionals within their communities, specific studies on stigma among pharmacists are scarce.[18] There is discrepancy in the literature about attitude of pharmacists towards patients with mental disorders. A study conducted in Belgium showed that community pharmacists have positive attitude towards their role in depression care and training programs will be helpful to further improve unfavorable attitude.[15] Another study showed that community pharmacists have social distance towards patients with depression where social distance may be defined as individuals

self-report on relative willingness to participate in different types of relationships with a person who has stigmatized identity.[18]

2.4 Future care

Considering their expertise in medication management, easy access, and their frequent contact and trusting relationship with patients, pharmacists should be major contributor in providing care to patients with mental disorders.[15] In line with the concept of pharmaceutical care, pharmacists' role in care may expand to include patient education and support, enhancing medication adherence, monitoring treatment effectiveness, identifying adverse effects, and referring to their physician if indicated.[15] However, this is a relatively new role for pharmacists and is yet to be established.[15]

To expand the pharmacist's role beyond dispensing and providing additional care to patients taking antipsychotics, it is necessary to understand their perceptions regarding mental health patients and their intention to provide cognitive care to them. The Theory of Planned Behavior can be used to determine pharmacists' perceptions and intentions.

2.5 Theoretical Framework: Theory of Planned Behavior

The Theory of Planned Behavior is a model of the link between attitudes and behavior. The theory states that attitude toward behavior, subjective norms, and perceived behavioral control, together shape an individual's behavioral intentions and behaviors. This theory originates from the theory of reasoned action. According to the theory of reasoned action, if people see the suggested behavior as positive (attitude), and if they think their significant others want them to perform the behavior (subjective norm), this results in a higher intention (motivation) and they are

more likely to perform the behavior. A counter-argument against the high relationship between behavioral intention and actual behavior has also been proposed, as the results of some studies show that because of circumstantial limitations, behavioral intention does not always lead to actual behavior. Namely, since behavioral intention cannot be the exclusive determinant of behavior where an individual's control over the behavior is incomplete, Ajzen introduced the Theory of Planned Behavior by adding a new component, "perceived behavioral control." By this, he extended the Theory of Reasoned Action to cover non-volitional behaviors for predicting behavioral intention and actual behavior. In addition to attitudes and subjective norms (which make the theory of reasoned action), the Theory of Planned Behavior adds the concept of perceived behavioral control, which originates from self-efficacy theory (SET). The concept of self-efficacy was proposed by Bandura in 1977. According to Bandura, expectations such as motivation, performance, and feelings of frustration associated with repeated failures determine effect and behavioral reactions. He defined self-efficacy as the conviction that one can successfully execute the behavior required to produce the outcomes.
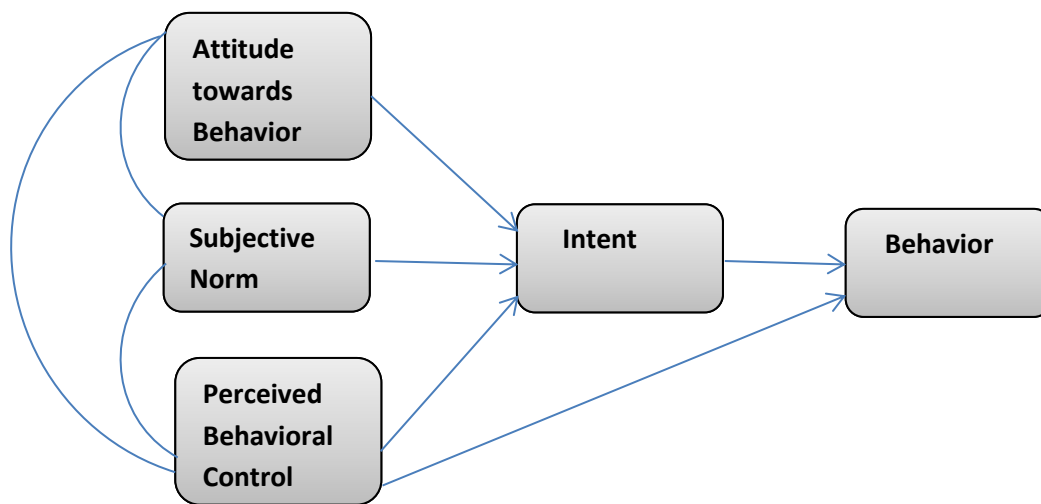
Fig 2: Schematic representation of Theory of Planned Behavior

Constructs:

Attitude:

Attitude toward the behavior is defined as the individual's positive or negative feelings about performing the behavior. It is determined through an assessment of one's beliefs regarding the consequences arising from a behavior and an evaluation of the desirability of these consequences. Formally, overall attitude can be assessed as the sum of the individual consequence and desirability assessments for all expected consequences of the behavior.

Subjective norm:

Subjective norm is defined as an individual's perception of whether people important to them think the behavior should be performed. The contribution of the opinion of any given referent is weighted by the motivation that an individual has to comply with the wishes of that referent. Hence, overall subjective norm can be expressed as the sum of the individual perceptions for all relevant referents.

Behavioral Control:

Behavioral control is defined as one's perception of the difficulty of performing a behavior. The TPB views the control that people have over their behavior as lying on a continuum from behaviors that are easily performed to those requiring considerable effort, resources, etc.

2.6 Studies using TPB:

A study by Pradel, used Theory of Planned Behavior to explore various factors that may influence community pharmacists' pediatric asthma counseling.[19] Main outcomes measured were pharmacists' attitude, subjective norm, perceived behavioral

control and intention to provide pediatric asthma counseling. Attitudes, perceived ease of counseling and subjective norms were significantly associated with the intention to counsel child.

Another study by Herbert used this theory to predict behavioral intention of pharmacist to provide Medicare medication therapy management services (MTMS) and to determine the relationship between pharmacists' characteristics and intention to provide MTMS.[20] Pharmacists having stronger intent to provide services were those who thought that they have stronger control over providing MTMS felt their peers approved provision of MTM and had positive attitude towards providing MTMS. In conclusion attitude, subjective norm and perceived behavioral control were significant predictors of intent.

2.7 Modified Theory of Planned Behavior:

The TPB is a flexible model that is open to the inclusion of additional variables. Previous studies have used a modified Theory of Planned Behavior to increase relevance and accuracy of the model.

A study by Dumitrescu et al, added knowledge to the original constructs, regarding it as a foundation on which attitudes, subjective norms, and perceived behavioral control are built.[21] The study tested the efficiency of the extended model of the Theory of Planned Behavior (TPB) in predicting intention to improve oral health behaviors.[21] In the study, first year medical students completed a questionnaire assessing intentions, attitudes, and subjective norms, perceived behavioral control, oral health knowledge, and current oral hygiene behaviors. Attitudes toward oral health behaviors were slightly more important than perceived behavioral control in predicting intention.

Oral health knowledge significantly affected affective and cognitive attitudes, while current behavior was not a significant predictor of intention to improve oral health behavior.

A study by Whitford et al, investigated the motivation of pregnant women towards the practice of pelvic floor exercises during pregnancy using a revised Theory of Planned Behavior (RTPB), incorporating measures of past behavior.[22] The study used a variation of the theory proposed by Maddux (1993).[22] In this revised TPB (RTPB), SE (a judgment about whether one has the ability to carry out the desired behavior) replaced PBC (belief about control over carrying out the behavior over a period of time). TPB variables (attitude, subjective norm, and self-efficacy) explained 53.1% of the variance in intention to practice pelvic floor exercises during pregnancy. Confidence in ability to perform pelvic floor exercises correctly (self-efficacy) reliably predicted subsequent practice.

Chapter Three

Methods

This chapter explains the methodology that was used in this study. Specifically, the study assessed pharmacists' knowledge, attitude, subjective norm, self-efficacy and intention towards providing care to patients who take antipsychotics. The methodology used is discussed under the following sections.

- Study Population
- Sample Size Determination
- Operational Definitions:
- Instrumentation
- Instrument validation
- Instrument administration and data collection
- Data analysis

3.1 Introduction

This was a prospective study design meant to assess perceptions of pharmacists working in the state of Ohio. As the study involved confidential data, approval was obtained from the Institutional Review Board (IRB) at the University of Toledo.

3.2 Study Population

The study population included all licensed pharmacists in the state of Ohio (community pharmacists and hospital pharmacists). The sample was selected from a list of registered pharmacists acquired from the Ohio State Board of Pharmacy.

Sample selection was done through cluster sampling to improve the external validity and thereby to generalize results to the population. The sample was divided in to two groups, community pharmacists and hospital pharmacists. Pharmacists were selected randomly from these groups based on their percentage in the community. The sample chosen for the study had the following inclusion and exclusion criteria:

- Pharmacists working in Ohio – Firstly, only those community and hospital pharmacists were selected who had a license to work in Ohio. Those who practiced outside of Ohio were excluded from the study as the pharmacy laws and regulations for counseling may differ by state.

3.3 Sample Size Determination

The study used a random sample of the pharmacists who met the inclusion criteria. Sample size was calculated using Macorr© Research Solutions online sample size calculator. A confidence level of 95% was used to calculate the sample size. With a population size of 1630 pharmacists, the necessary sample size was determined to be 375, which means that a minimum of 376 responses were needed for statistical analysis. Previous surveys of pharmacists in similar studies have obtained a response rate of 15-20% in general.[23,24] A conservative estimated response rate of 15% was used for this study. Therefore, to obtain a minimum of 375 responses, 2400 surveys were e-mailed, as per the calculation below:

No. of surveys to send= Sample size/ 15%= 375*100/15= 2500

3.4 Modified Theory of Planned Behavior
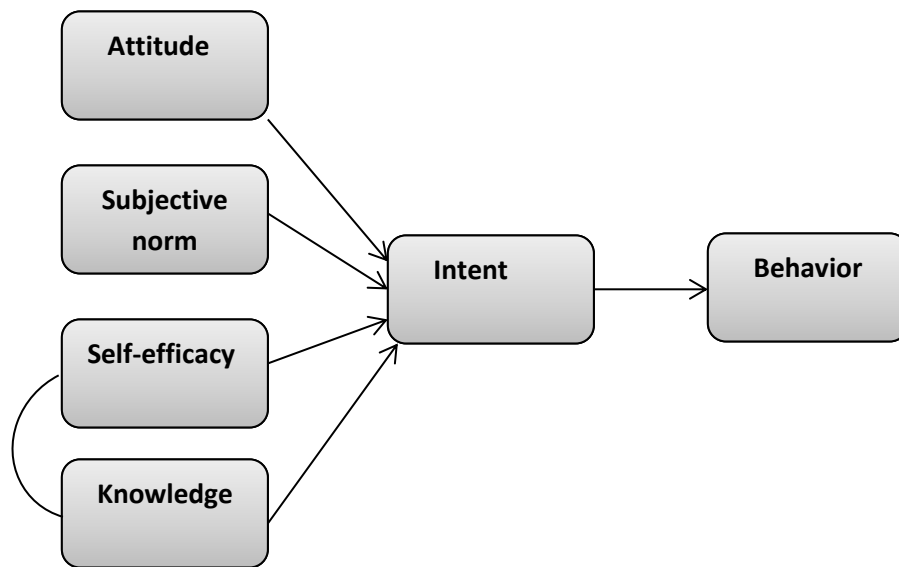
Fig 3: Modified Theory of Planned Behavior framework

Operational Definitions:

Knowledge:

For this study, knowledge was defined as pharmacists' knowledge on antipsychotics such as drug choice for particular disorders, drug-drug interactions and side effects associated with antipsychotic medications.

Attitude:

Attitude was defined as pharmacists' positive or negative feelings about patients on antipsychotic medications and towards providing additional care (e.g. counseling) to these patients.

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Subjective Norm:

For this study, subjective norm was defined as the beliefs of important people in the life of pharmacists that could influence their decision towards providing additional care to patients taking antipsychotics.

Self-efficacy:

For the purpose of this study, self-efficacy was defined as the confidence level of pharmacists to provide additional care to patients taking antipsychotics.

Intent:

For the purpose of this study, intent was defined as the willingness of pharmacist to provide additional care to patients on antipsychotics

3.5 Instrumentation

Based on inputs from literature and experts with experience under this area, a self-administered questionnaire was constructed. The survey had questions on the following constructs of the modified Theory of Planned Behavior: attitude, subjective norm, knowledge, self-efficacy and intention. The questionnaire consisted of 40 closed ended questions. A 5 point Likert type scale was used to measure responses (1= was strongly agree, 2= agree, 3= disagree, 4= strongly disagree, 0= neutral). Survey was divided into following sections.

Section I gathered information on pharmacists attitude towards patients who take antipsychotics. Items in this section covered questions on pharmacist's general attitude towards patients with psychiatric disorders, additional services that pharmacists might be

providing to these patients and advantages of providing counseling. This section had 10 questions. The total score was calculated as a sum of all the responses. Respondents could score a minimum of 0 and a maximum of 40 on this section. Pharmacists were deemed to have a positive attitude if their total score was less than or equal to 20.

Section II contained information about subjective norms. This included questions on willingness of pharmacists to provide additional care, if relevant others are supportive of this behavior. This section had three questions. The total score on this section was calculated as the sum of all responses. The minimum possible score on this section was 0 and the maximum was 12.

Section III included questions determining confidence level of pharmacists regarding their expertise in providing counseling to patients taking antipsychotics. This section had two questions. The total score on this section was calculated as sum of the two responses. The minimum possible score on this section was 0 and the maximum was 8.

Section IV included questions regarding pharmacists' intention of providing counseling to patients taking antipsychotics and the intent to provide written information about patients' disease, medications and their side effects. This section also included questions about pharmacists' intent to initiate a conversation with patients and a question on willingness of pharmacists to acquire expertise in this area. This section had four questions. The total score on this section was calculated as the sum of all the responses. The minimum possible score on this section was 0 and the maximum was 16.

Section V examined barriers that pharmacists experienced while providing care to patients taking antipsychotics. This section had six close-ended questions. Additionally pharmacists were asked to mention other barriers that may exist in providing counseling to mental health patients.

Section VI gathered information about the actual knowledge of pharmacist regarding antipsychotic medications, their side effects, drug-drug interactions and FDA approved drugs for particular mental disease states.

3.6 Instrument validation

Before sending the survey to the final population, a pilot study was conducted by administering the survey to registered pharmacists working in pharmacies near the University of Toledo. The survey was hand delivered in a sealed envelope and was retrieved by the researcher after two days. Pharmacists were requested to keep the survey in the sealed envelope to maintain anonymity. Collected responses were entered into an excel document and the survey was analyzed for validity and reliability. Based on the results obtained, adjustments to the items or to the rating scale were made. The adjusted survey was then sent to the final (larger) sample.

3.7 Instrument administration and data collection

Initially, a pre-notification e-mail was sent to the participants stating that they were invited to participate in a study conducted by researchers from the University of Toledo, College of Pharmacy and Pharmaceutical Sciences. It mentioned the purpose of the study and provided the contact information of the researchers, in case potential respondents had any questions before participating in the study.

After three days, the survey was sent to pharmacists using 'Survey Monkey' software. Each survey was attached to a cover letter. The cover letter explained the nature and purpose of the study. It emphasized the importance of the study and its voluntary nature. It also stated that all the responses will be kept confidential. The letter also informed the sample population of the distribution of two $50 gift cards through a raffle draw. The survey was sent out every week for five weeks with a reminder email to non-responders. After the responses were collected, the data was downloaded into excel spreadsheets on secure computers. Deindentified data was created for the purpose of analysis. The data on the computer was accessible only to the research team authorized by the IRB for this protocol.

3.8 Data analysis

The data were analyzed using IBM SPSS, version 17.0 for Windows, (SPSS for Windows, Chicago, IL, 2009). The internal reliability of the survey was assessed by measuring the Cronbach's alpha for the survey. A frequency distribution was calculated for the responses. In order to examine the best predictor (attitude, subjective norm, self-efficacy and/or knowledge) of intention, a multiple logistic regression model was built. Logistic regression was performed to determine if any of the demographic variables predict attitude of pharmacists. Descriptive statistics were calculated for barriers faced by pharmacists in providing care to patients taking antipsychotics.

Chapter Four

Results

This chapter provides information on the results obtained from the data analysis. The data input and analyses were carried out using IBM SPSS Statistics version 19. This chapter consists of following sections:

- Response Rate

- Reliability and Validity of the Questionnaire

- Description of the Study Population

- Testing of Research Questions and Hypotheses

4.1 Response Rate

The survey for the study was sent out to 2,500 randomly selected Ohio pharmacists , of which 250 completed the survey. The survey was considered incomplete if more than two theory based questions questions were left unanswered. Ten surveys were eliminated due to missing responses. The calculated response rate was10%.

4.2 Reliability and Validity of the Questionnaire

Face and content validity of the survey were determined through the review of pharmacy administration graduate students and committee members. In order to calculate the validity and the reliability of the survey instrument, a pilot study was conducted before sending out the survey. Fifteen pharmacists practicing at different pharmacies in

Toledo filled out the pilot survey. Their responses were analyzed using a Rasch model through the WINSTEPS® Rasch model computer program.

Item fit statistics were generated by WINSTEPS to ensure that all the items are measuring the same construct. Items were determined to be misfitting if the standardized fit statistic *ZStd* was greater than 2.0. Out of the 41 items of the pilot survey, two items were found to be misfitting. Both the items were removed from the survey.

To further check the validity and reliability of the instrument, items measuring each construct were separately analyzed using WINSTEPS. The Rasch person reliability scores were obtained for items under each of the constructs. Based on the values obtained, it can be inferred that the survey used for this study has a satisfactory reliability and validity and can be reused with some modifications.

Table 1: Internal reliability of the subscales

Subscale	Person reliability
Attitude	0.709
Subjective Norm	0.637
Self-Efficacy	0.436
Intention	0.541
Barriers	0.648

After completion of the data collection process, reliability for the survey was re-tested, using responses obtained from the 240 pharmacists who participated in the study. The Rasch reliability for the survey was 0.91 and the Cronbach's alpha value was 0.62.

4.3 Description of the Study Population:

Table 2 shows the demographic information of the study population.

Table 2: Demographic Characteristics of the Study Population

Variables	N=	Missing responses (n)	Percentage (%)
Gender			
Males	107	1	44.6
Females	132		55
Age			
Below 25	0		0
26-35 years	40		16.7
36-45 years	53	0	22.1
46-55 years	80		33.3
56-65 years	44		18.3
Above 65 years	23		9.6
Best Source of gaining Knowledge of antipsychotics			
Pharmacy Curriculum	16		6.7
Practice Experience	43		17.9
Continuing education sessions, Seminars, Meetings	181	0	75.4
Years of Experience			
Less than 5 years	1		0.4
6-15 years	67	0	27.9
16-25 years	63		26.3
Greater than 25 years	109		45.4
Pharmacy Size			
Less than 200 prescriptions	72	10	30
201-400 prescriptions	88		36.7
401-600 prescriptions	31		12.9
Greater than 600	39		16.3
Pharmacy Setting			
Community Pharmacy	169	9	70.4
Hospital Pharmacy	62		25.8

Descriptive statistics revealed that the sample population consisted mostly of females (55%) compared to males (44.6%). A majority of respondents were of the age group ranging from 46-55 years (33.3%) followed by 36-45 years (22.1%), 56-65 years (18.3%), 56-65 years (16.7%) and above 65 years (9.6%).The study population did not

involve any respondents under 25. According to the vast majority of the respondents (75.4%) continuing education sessions, seminars and meetings are the best methods of gaining knowledge of antipsychotics. Only 17.9% of participants suggested their practice experience as the best source of knowledge of antipsychotics, followed by 6.7% of respondents who considered their pharmacy curriculum as the best source of knowledge. A majority of respondents (45.4%) reported greater than 25 years practice experience, followed by 6-15 years (27.9%), 16-25 years (26.3%) and less than 5 years (0.4%). Around 36.7% of pharmacists worked in a pharmacy that filled around 201-400 prescriptions per day, followed by less than 200 prescriptions per day (30%), greater than 600 prescriptions per day (16.3%) and 401-600 prescriptions per day (12.9%).

4.4 Testing of Research Questions and Hypothesis

In this section the results of the data analysis for each research question and hypothesis is reported in order below.

Objective 1: To determine pharmacists' attitude, self-efficacy and subjective norms and intention towards patients with psychiatric disorders and towards providing care to them.

Description of the responses of the subscales:

Section I (Attitude):

This section had ten questions, measuring the attitude of pharmacists towards patients with mental disorders and providing additional care to these patients. For the purpose of analysis responses showing agreement (strongly agree and agree) and

disagreement (strongly disagree and disagree) were combined. Table 3 gives the summary of the responses.

Table 3: Attitude of pharmacists towards providing additional care to patients with mental illness.

Attitude	Strongly Agree/ Agree		Strongly disagree/ Disagree		Neutral	
	N	%	N	%	N	%
Patients taking antipsychotics are unreliable.	169	70.4	33	13.8	38	15.8
Patients taking antipsychotics get all necessary information about their disease from their psychiatrist.	189	78.8	30	12.5	21	8.8
Patients taking antipsychotics get all necessary information about their medications from their psychiatrist.	221	92.1	10	4.2	9	3.8
I follow up with patients to be sure they get their antipsychotics refilled.	63	26.3	97	40.4	80	33.3
I provide support and listen to the patient.	199	82.9	5	2.1	36	15
I Advise patients to consult their doctor when I recognize severe side effects.	223	93	3	1.2	14	5.8
Pharmacists' participation in counseling patients on antipsychotics is an important step in patient care.	237	98.7	0	0	3	1.3
My patients will trust me more if I provide counseling.	206	85.9	7	2.9	27	11.3
Counseling will attract more patients to my pharmacy.	153	63.7	19	8	68	28.3
Involvement in counseling will improve my job satisfaction.	200	83.4	10	4.2	30	12.5

A maximum possible score for each item was four, so the highest score for the attitude measures was 40. An agreement to the items in this category denotes that the pharmacists had a positive attitude towards patients taking antipsychotics and towards providing additional care to these patients. Pharmacists were deemed to have a positive

attitude if their total score was less than or equal to 20. Scores above 20 were considered to denote a negative attitude. A majority of the surveyed pharmacists (95%) were found to have a cumulative score of less than 20 and thus a positive attitude towards patients taking antipsychotics and providing additional care to mental health patients.

Section II (Subjective Norm):

This section consisted of three questions. Table 4 represents the summary of the responses. With each item having a maximum possible score of four, the highest score for the subjective norm measure, consisting of three questions, was 12. For the respondents to be considered as having a positive subjective norm towards providing additional care to patients taking antipsychotics, a score of 6 or below was required**.** Any score above 6 was considered as negative subjective norm. Around 89% of pharmacists had positive subjective norm.

Table 4: Subjective norm of pharmacists towards providing additional care to patients with mental illness.

	Strongly Agree/ Agree		Strongly disagree/ Disagree		Neutral	
	N	**%**	**N**	**%**	**N**	**%**
If patients in my community need counseling, it will motivate me to do so.	193	80.4	14	5.8	33	13.8
If physicians in my community want me to provide counseling, it will motivate me to do so.	192	80	13	5.4	34	14.2
If other pharmacists in my community provide counseling, it will motivate me to do so.	153	63.8	24	10.1	63	26.3

Section III (Self-efficacy):

This section had two questions. Table 5 represents the summary of the responses. For the respondents to be considered as having a higher level of self-efficacy to provide additional care to patients with mental illness, a score of 4 or below was required. A higher score in this section represents a lower confidence level in providing additional care to patients with mental illness. Close to 68% of respondents had high self-efficacy representing a higher confidence level in providing additional care to patients taking antipsychotics.

Table 5: Self-efficacy of pharmacists towards providing additional care to patients with mental illness.

	Strongly Agree/ Agree		Strongly disagree/ Disagree		Neutral	
	N	%	N	%	N	%
I feel confident about my expertise to provide counseling to patients with psychiatric disorder on his or her medication.	158	65.9	53	22.1	28	11.7
I feel confident that I can make time to provide counseling to patients with psychiatric disorder.	121	50.4	79	32.9	39	16.3

Section IV (Intention):

This section had four questions regarding pharmacists intentions of providing additional care to mental health patients. Since each question was with the maximum score of four, maximum possible score for the section was 16. To have intention of providing additional care to patients taking antipsychotics, a score of 8 or below was

required. 90% of pharmacists intended to provide additional care to patients taking antipsychotics.

Table 6: Intention of pharmacists towards providing additional care to patients with mental illness.

	Strongly Agree/ Agree		Strongly disagree/ Disagree		Neutral	
	N	**%**	**N**	**%**	**N**	**%**
I intend to provide counseling to patients taking antipsychotics.	148	70	10	4.2	61	25.4
I will provide written information to patients on antipsychotics about their medications and their side effects.	213	88.8	6	2.5	21	8.8
I intend to initiate conversation with patients who take antipsychotics.	133	55.4	27	11.3	80	33.3
I intend to attend continuing education programs on the appropriate use of antipsychotics.	169	70.4	17	7.1	54	22.5

Objective 2: To determine pharmacists' knowledge of antipsychotics.

Knowledge section had seven questions and maximum possible score on this section was 7. Table 7 gives the summary of scores that pharmacists scored in knowledge section. Cumulative percentages shows that very few pharmacists (1.7%) were able to score 6 points in this section. 80% of pharmacists scored less than 3 points while 26.3% of pharmacists scored 0 points. This summary table shows that pharmacists have low knowledge level regarding antipsychotics.

Table 7: Summary of scores on the knowledge section

Total Score	No. of pharmacists with respective score	Percent pharmacists with respective score	Cumulative Percent
0	63	26.3	26.3
1	25	10.4	36.7
2	51	21.3	57.9
3	54	22.5	80.4
4	34	14.2	94.6
5	9	3.8	98.3
6	4	1.7	100.0
7	0	0	0

Objective 3: To determine the relationship of knowledge, attitude, subjective norm and self-efficacy with intention.

In this section the relationship between each construct knowledge, attitude, subjective norm and self-efficacy, was assessed with intention using Pearson's Correlation. Table 8 shows the correlation between intention and these variables. Attitude, subjective norm and self-efficacy were significantly correlated with intention. A moderate positive correlation was observed between attitude and intention ($r = 0.307$; $p = 0.000$). A weak positive correlation was observed between subjective norm and intention ($r = 0.209$; $p = 0.001$). A weak positive correlation was observed between intention and

self-efficacy (r = 0.107; p= 0.004). Knowledge and intention did not have any significant

correlation.

Table 8: Correlation between independent variables and intention

		Intention	Attitude	Subjective Norm	Self-efficacy	Knowledge
Pearson Correlation	Intention	1.000	.307	.209	.170	.041
	Attitude	**.307**	1.000	.268	.292	.047
	Subjective Norm	**.209**	.268	1.000	.170	-.062
	Self-efficacy	**.170**	.292	.170	1.000	**.131**
	Knowledge	**.100**	.047	-.062	.131	1.000
Sig. (1-tailed)	Total(16-19)	.	.000	.001	.004	.262
	Attitude	**.000**	.	.000	.000	.234
	Subjective Norm	**.001**	.000	.	.004	.168
	Self-efficacy	**.004**	.000	.004	.	**.043**
	Knowledge	**.262**	.234	.168	.022	.
N	Intention	240	240	240	240	240
	Attitude	240	240	240	240	240
	Subjective Norm	240	240	240	240	240
	Self-efficacy	240	240	240	240	240
	Knowledge	240	240	240	240	240

Objective 4: To determine the relationship between knowledge and self-efficacy.

Table 8 shows the correlation between knowledge and self-efficacy of pharmacists. There is weak positive correlation between knowledge and self-efficacy (r = 0.131; p= 0.043)

Objective 5: To determine the best predictor of intent to provide care, considering knowledge, attitude, self-efficacy and subjective norms

In this section, an analysis was done to find out the variables that are significant predictors of intention. A multiple regression model was built with intention as a dependent variable and as independent variables attitude, subjective norm, self-efficacy and knowledge. The results indicated that the model used was significant in predicting intention ($R^2 = 0.117$; $F (4, 235) = 7.822$; $p<0.05$). The factors significantly predicting intention were attitude ($\beta = 0.188$; $p<0.05$) and subjective norm ($\beta = 0.144$; $p<0.05$) which accounted for 18.8% and 14.4% variance respectively.

Table 9: Regression Output

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	2.024	.741		2.732	.007	.564	3.484
Attitude	**.188**	.049	.250	3.794	**.000**	.090	.285
Subjective Norm	**.144**	.070	.131	2.046	**.042**	.005	.282
Self-efficacy	.093	.085	.071	1.095	.275	-.074	.260
Knowledge	.047	.103	.029	.460	.646	-.155	.249

Objective 6: To determine if demographics predict attitude of pharmacists towards providing care to patients taking antipsychotics.

Logistic regression was performed to determine if any of the demographic variables predict the attitude of pharmacists towards providing care to patients with mental disorders.

Attitude, which was a dependent variable, was converted to a categorical variable. Pharmacists with a positive attitude were denoted as '1' and those with a negative attitude were denoted as '0'. The analysis showed that none of the demographic variables predicted the attitude of the pharmacist.

Objective 7: To evaluate the barriers in providing pharmaceutical care to patients taking antipsychotics.

Table 10: Summary of Barriers in providing pharmaceutical care to patients taking antipsychotics.

	Strongly Agree/ Agree		Strongly disagree/ Disagree		Neutral	
	N	%	N	%	N	%
Lack of education in mental health issues.	192	80	34	14.2	14	5.8
Lack of time for individual attention to patients.	216	90	16	6.7	8	3.3
Lack of privacy in pharmacy to discuss personal issues.	165	68.8	53	22.1	22	9.2
Difficulty in communicating well with the patients on antipsychotics.	111	46.3	86	35.9	43	17.9
Patients taking antipsychotics do not want to talk to their pharmacist about their disease.	69	28.7	110	45.9	61	25.4
Participating in counseling will increase my stress level.	39	16.2	156	65	45	18.8

A majority of the pharmacists (90%) expirienced lack of time to individual attention as a major barrier followed by lack of knowledge (80%). Almost 70% of pharmacists reported lack of privacy in the pharmacy to discuss personal issues as a barrier. Over 46% of pharmacists reported difficulty in communicating well with the patients taking antipsychotics. Almost 30% of pharmacists felt that patients taking antipsychotics do not want to talk to their pharmacist about their disease. Only 16% pharmacists reported that counseling mental health patients might increase their stress level.

Chapter Five

Discussion

This chapter discusses the findings presented in the previous chapter. It consists of discussion of study response rate, demographic characteristics of the respondents, the study objectives, limitations of the study, conclusions and potential implications for practice and future research.

5.1 Study response rate

The survey had a gross response rate of ten percent for the four to five week study period. Although the response rate was low, it was comparable to other studies surveying pharmacists from the state of Ohio.[25-26] A low response rate for online surveys may be due to survey links being forwarded to spam folders and going unnoticed.

5.2 Demographics and other variables:

There were slightly more female respondents compared to male respondents in the study. This was in line with the database we used where there were a higher percentage of females compared to males. A majority of respondents worked in pharmacies that filled less than 400 prescriptions per day. A reason behind the low response rate of pharmacists working in a pharmacy with more than 400 prescriptions per day could be the busy schedule of pharmacists. Most of the respondents were working in a community pharmacy. This was in line with the database used in our research where about 70% of the pharmacists were working in a community pharmacy while the other 30% were working in a hospital pharmacy. Around 75% of pharmacists suggested that

attending continuing educational (CE) sessions, meetings and seminars the best ways gaining knowledge of antipsychotics. This is in line with a study conducted in Texas which showed that pharmacists had positive attitudes towards continuing educational sessions.[27]

5.3 Discussion of study objectives:

Objective 1: To determine attitude, subjective norm, self-efficacy and intention of pharmacists towards providing additional care to patients taking antipsychotics.

Attitude:

For the purpose of this study, attitude was defined as pharmacists' positive or negative feelings about patients on antipsychotic medications and providing additional care (e.g. counseling) to these patients.

Our study found that around 95% of the pharmacists had a positive attitude towards patients taking antipsychotics. Our findings were similar to a Canadian study which showed that pharmacists had a positive attitude towards mental health patients.[11] Further, our study showed that pharmacists had favorable attitudes towards providing counseling to patients who are on antipsychotics. A majority of the pharmacists (86%) agreed that their participation in providing counseling to patients who are taking antipsychotics is an important step towards patient care. A majority of the pharmacists felt that providing counseling will improve their job satisfaction. Besides this, patients would trust them more if they provide counseling. However, a majority of the pharmacists agreed that patients receive all the necessary information about their disease(s) and medication(s) from their psychiatrists. Pharmacists' perceptions that

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patients are receiving medication related information from their physicians may be a cause for concern as this may have led some pharmacists not to offer any medication-related counseling or follow up with patients regarding their antipsychotic medications. Pharmacists' perceptions that patients may not need counseling from them may be in contrast with patients' opinions regarding their need for pharmacists' care. For example, a study by Hoch et al showed that patients with schizophrenia, expect pharmacists to provide medication related information apart from dispensing.[28]

Due to issues described above it is important that pharmacists initiate the conversation with patients by asking them about their medication-related concerns. This would help pharmacists' to better meet the needs of patients and thus eliminate potential communication gaps between them.

Subjective Norm

For the purpose of our study, subjective norm was defined as the beliefs of important people in the life of pharmacists that could influence their decision towards providing additional care to patients taking antipsychotics.

Our study findings showed that nearly 80% of the pharmacists felt motivated to provide counseling to mental health patients if they need it. This was similar to a study conducted in Wisconsin which stated that patients' motivation was an important determinant of the amount and type of counseling provided.[29] As described earlier, pharmacists might have perceived that patients receive necessary information regarding their medications and diseases from their physicians, hence they might not offer counseling to these patients. Thus patients may not be aware that pharmacists can provide

extensive counseling services. Therefore, it is vitally important for pharmacists to offer counseling services to mental health patients. Pharmacists should inform patients and their caregivers about available counseling services when they come to fill their prescriptions at a pharmacy. Educational programs or campaigns can serve as a step to raise public awareness about counseling services provided by pharmacists.

Pharmacists also felt motivated to provide counseling if physicians in the community desired it. For the successful collaboration between pharmacists and physicians, it is important for physicians to be aware of the benefits of counseling services and skills and expertise of pharmacists.[30] For developing a collaborative approach, it is necessary for pharmacists to build relationships with physicians through communication. This relationship could be developed through some continuing education programs or opportunities geared for physicians on the roles of pharmacists as part of the healthcare team.

Self-efficacy:

For this study, self-efficacy was defined as the confidence level of pharmacists to provide additional care to patients taking antipsychotics. Nearly 66% of pharmacists were confident that they have the required expertise to provide medication related counseling to patients with psychiatric disorders. However, less than half of the pharmacists had ample time to provide counseling. This reveals that although pharmacists were confident about their ability to provide counseling, time served as a major barrier. This finding was congruent with the previous study that showed that time was the major barrier faced by pharmacists in providing additional care to patients.[31]

Intent

For this study, intent was defined as the willingness of pharmacists to provide additional care to patients taking antipsychotics.

Descriptive statistics showed that 90% of surveyed pharmacists intended to provide additional care to patients taking antipsychotics. Although around 89% of pharmacists were ready to provide written information on antipsychotic medication and their side effects, only 55% of the pharmacists were ready to initiate the conversation with patients who take antipsychotic medications. This might be due to the fact that pharmacists have a busy schedule and may not have time for counseling patients. Another reason could be their perceptions that patients might feel uncomfortable while talking to pharmacists regarding their disease(s).[31] A study has shown that pharmacists feel uncomfortable discussing the symptoms and medications with patients who have mental illness compared to any other physiological disorder.[11]

Nearly 70% of the pharmacists intended to attend continuing education programs on the appropriate use of antipsychotics. This can be tied to the finding of our study which showed that pharmacists had limited knowledge of antipsychotic medications.

Objective 2: To determine pharmacists' knowledge of antipsychotics

Knowledge

For this study, knowledge was defined as pharmacists' knowledge of antipsychotics such as drug choice for a particular disorder, drug-drug interactions and side effects of antipsychotic medications.

Descriptive statistics showed that only 6% of pharmacists scored at least 50% of the points on the knowledge section. Although pharmacists performed well on the question assessing their knowledge regarding symptoms of particular disorders, they were unable to score points on questions that were meant to assess their knowledge of side-effects associated with various drugs, with the drug choice for particular disorders and on FDA regulations for antipsychotic medications.

Although our findings that pharmacists lack knowledge on antipsychotic medications was quite discouraging, it was interesting to see that nearly 70% of the pharmacists intended to attend continuing education programs which will help them in updating their knowledge on antipsychotic medications. Even though level of knowledge among pharmacists was low, 70% of pharmacists intended to provide counseling to patients taking antipsychotics. This showed that pharmacists might be confident in providing counseling to patients while using various sources to assist them in providing proper information.

Objective 3: To determine the relationship of knowledge, attitude, subjective norm and self-efficacy with intention.

Results indicated that attitude, subjective norm and self-efficacy of pharmacists were positively correlated with their intent to provide additional care to patients taking antipsychotics. This showed that with a positive attitude towards patients with a mental health disorder, a positive subjective norm and a positive self-efficacy, intent of pharmacists to provide additional care increases. To increase the intent of pharmacists to provide additional care to mental health patients, efforts should be made to further increase positive attitude, subjective norm and self-efficacy of pharmacists, which in turn will benefit patients with mental illness. Continuing education programs might help in enhancing positive attitudes and confidence level of pharmacists. Better communication with patients and physicians will be a good way to understand their perceptions regarding required care, which in turn might motivate pharmacists to provide medication-related counseling to these patients.

Objective 4: To determine the relationship between knowledge and self-efficacy.

Our study shows that there is a weak positive relationship between knowledge and self-efficacy. This shows that confidence level of pharmacists regarding providing additional care to patients taking antipsychotics does not depend strongly on their knowledge of antipsychotics. This finding is contrary to our hypothesis that if knowledge of antipsychotic increases self-efficacy increases proportionately. This finding could be due to the fact that pharmacists were requested not to use any outside sources like literature or online resources to answer the knowledge questions while completing the

survey. This might have resulted in their low knowledge regarding antipsychotics but they might be confident on where to find the relevant information needed while counseling, given the high self-efficacy values.

Objective 5: To determine if attitude, subjective norm, self-efficacy, and knowledge together predicted intention of pharmacists to provide additional care to patients taking antipsychotic medications.

Our analysis showed that the model was overall a significant but weak predictor of intention. This implied that intention of pharmacists to provide additional care to patients taking antipsychotics depends to some degree on their attitudes, subjective norm, self-efficacy, and knowledge about antipsychotics. Overall, these variables together predicted only 11.7% of the variance in intention of pharmacists. This seems to be negligible as previous literature has shown that using TPB to study intentions of healthcare providers predicted 30-50% of the variance in past.[32-34] A study conducted in Iowa showed that around 63% of variance in providing MTM services was explained by their attitude, subjective norm, and perceived behavior control.[20] Another study done in Maryland showed that subjective norm and perceived behavior control were the strongest predictors of intention of pharmacists to provide asthma counseling.[19] The effectiveness of the TPB in predicting pharmacists' perceptions shown by these studies might be due to the patient population it involved or the geographic area where the respective study is done. Our study suggests that the TPB may not be a comprehensive model to predict intentions of pharmacists, and other factors might affect intentions of pharmacists in this area. There might be some unexplained variance due to the stigma associated with the patient population involved. There is a possibility that pharmacists and patients feel quite

comfortable discussing physiological disorders like asthma, diabetes, hypertension or hyperlipidemia compared to psychological disorders. Another factor that could affect the intent of pharmacists to provide care to mental health patients is the lack of awareness regarding psychiatric disorders in patients. Patients may tend to pay lesser attention to the psychological disorders compared to physiological disorders as symptoms of some of the mental health disorders are not very prominent. In these cases, patients may feel that medications and medication related counseling is not required or as important.

Objective 6: To determine if demographics predict attitude of pharmacists towards providing care to patients with mental disorders.

We hypothesized that with more years of experience, pharmacists will have a more positive attitude towards metal health patients and towards providing counseling to them. Pharmacy size might play an important role in their attitude considering that time is a major barrier for the pharmacists in providing cognitive services. Another hypothesis was that pharmacists working in the pharmacies with fewer prescriptions per day will have less busy schedule and will have a more positive attitude towards providing counseling services. Also, our consideration was that community pharmacists will be more positive towards providing counseling to mental health patients as they are the ones who get to interact more with the patients. However, results contradicted all our hypotheses. None of the demographic variables predicted pharmacists' attitude towards providing additional care to the patients taking antipsychotics.

Objective 7: To look at the barriers pharmacists faced in providing additional care to patients taking anti-psychotics.

A major barrier that pharmacists faced in providing additional care to the patients was lack of time to attend to each patient individually. A majority of the pharmacists agreed that they lack education on mental health issues. Some of them perceived lack of personal space and difficulty in communicating well with patients taking antipsychotics as a barrier. However, increase in stress level while working with mental health patients was not perceived to be a major barrier. These barriers were congruent with the previous study by Raisch which showed that excessive workload, lack of privacy, patient attitudes, and store layout were some of the major barriers in providing cognitive services to patients.[31] To overcome these barriers efforts should be made to increase the conversation between pharmacists and patients. Having a separate counseling area might help patients to open up to pharmacists regarding their disease or medication related issues. Similarly, increasing the knowledge level by attending continuing education programs in mental health might help in increasing the confidence level of pharmacists in providing cognitive care to mental health patients.

5.4 Limitations

There were four major limitations to the study. One limitation might be that we did not look at the interaction effects between independent variables which might have affected the total variance explained by the modified TPB model. A second limitation of our study was having the low response rate. Possible reasons for this could be pharmacists may not have received emails due to delivering of emails with the survey link to their spam or junk e-mail folders and the survey might have remained unnoticed.

In order to obtain the desired response rate, weekly reminder emails were sent to pharmacists throughout our data collection process. To further improve the response rate, two $50 gift cards were distributed through a raffle draw. Despite these efforts response rate was low. A third limitation of our study was that no comparative information was available for some of the demographic variables like age, size of pharmacy, and years of experience of pharmacists ,so it was difficult to find out the representative nature of the data obtained. Although from the gender and pharmacy setting perspectives, the sample appeared to be representative of the Ohio pharmacists' population. A final limitation was the fact that our study involved Ohio pharmacists only; therefore, the findings are not generalizable to pharmacists outside of the state.

5.5 Conclusion

Overall, we found that pharmacists had a positive attitude towards providing additional care to patients taking antipsychotics. Attitudes of pharmacists towards patients taking antipsychotic medications and towards providing additional care to them were strong predictors of intention. Patients and physicians' desire of pharmacists' involvement were the major motivating factors for pharmacists to provide additional care to patients taking antipsychotics. Although pharmacists thought that providing cognitive services was beneficial for the profession and for patients, there still remains some substantial barriers to implementation of these services. Lack of time, education, and privacy were the major barriers limiting pharmacists to provide additional care to the mental health population. Pharmacists were overall found to have limited knowledge on antipsychotics. Hence, it is important to raise knowledge among pharmacists on antipsychotics. Increasing pharmacists' knowledge of antipsychotic medication might

lead to enhanced self-efficacy and greater intent of pharmacists to provide additional care to mental health patients, resulting in better care. Continuing education programs could help pharmacists in this process. Efforts in enhancing communication between pharmacists, physicians, and patients could help in increasing the confidence level of pharmacists to provide cognitive care to mental health patients.

5.6 Future implications and research

This is a unique study that added valuable information to the literature. Since, our survey had satisfactory reliability; it could be used in other studies with some modifications. Our study can also be replicated to study perceptions of pharmacists in other states. Pharmacists were overall found to have limited knowledge on antipsychotics. Hence, it is important to raise knowledge among pharmacists on antipsychotics. Increasing pharmacists' knowledge of antipsychotic medication might lead to enhanced self-efficacy and greater intent of pharmacists to provide additional care to mental health patients, resulting in better care. Continuing education programs could help pharmacists in this process. Efforts in enhancing communication between pharmacists, physicians and patients could help in increasing confidence level of pharmacist to provide cognitive care to mental health patients. This study can be used as a frame of reference for future studies that could look at the interaction effects theory variables might have and can further explain additional constructs that might play a role in predicting intentions of pharmacists to provide cognitive care to mental health patients.

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Appendix A

Pre-notification Letter

Dear Pharmacists,

In next few days, you will be invited to participate in a study conducted by researchers from the University of Toledo, College of Pharmacy and Pharmaceutical Sciences. The purpose of this study is to assess the perceptions of pharmacists towards counseling patients taking antipsychotics. You are being invited to participate in this study because your input is valuable to us.

Your participation in this study is voluntary. Your participation and completion of this survey will automatically enroll you for a chance to win one of two **$50 gift cards**. If you have any questions about the survey please contact me, Neha Gangal via email at neha.gangal@rockets.utoledo.edu or by phone at 614-371-3513 or my advisor, Dr. Monica Holiday-Goodman at mholida@utnet.utoledo.edu or by phone at (419)383-1968. Thank you very much for your cooperation.

Sincerely,

Neha Gangal   Dr. Monica Holiday-Goodman
MS Candidate   Program Director
Health Outcomes and Socioeconomic Sciences   Health Outcomes and Socioeconomic Sciences

Identifying pharmacist's perception, knowledge and perceived barriers towards providing care to patients taking antipsychotics.

Investigators:

Dr. Monica Holiday-Goodman
Program Director
Health Outcomes and Socioeconomic Sciences
419.383.1968

Neha S. Gangal
Master's Candidate
Health Outcomes and Socioeconomic Sciences
614-371-3513

Dr. Varun Vaidya
Assistant Professor
Health Outcomes and Socioeconomic Sciences
419-383-1516

Robert Bechtol
Clinical Assistant Professor
Health Outcomes and Socioeconomic Sciences
419.383.1956

Purpose: You are invited to participate in the research study entitled, "Identifying pharmacist's perception, knowledge and perceived barriers towards providing care to patients taking antipsychotics." conducted at the University of Toledo under the direction of Dr. Monica Holiday Goodman and Neha S. Gangal. The World Health Organization (WHO) acknowledged pharmacists as dynamic members of mental health care teams still concerns have been raised that medication-related needs of people with mental illness are

not adequately met in pharmacies. Very little is known about pharmacists' attitude towards patients with mental illness and providing additional care/ counseling to them. The purpose of this study is to understand the valuable thoughts of pharmacists regarding these patients, providing additional care to them and barriers they might face in providing care to these patients

Description of Procedures: The research study will take place at the University of Toledo, Toledo OH. Please complete the following survey to participate in this study. This survey is designed to take not more than 20 minutes of your time. Please complete the entire questionnaire, as each question is important in achieving valid results. Before participating in the study or after completing the questionnaire, you may send an e-mail to the research team and we will answer any questions you may have about the research.

Potential Risks: There are minimal risks to participation in this study. Your responses will be held confidential. You have a right to stop your participation at any point.

Potential Benefits: After completing the survey you will be automatically entered for a chance to win one of two $50 gift cards. Another direct benefit of participation in this research may be a better understanding regarding pharmacists' perceptions, knowledge and perceived barriers towards providing care to the patients taking antipsychotics. By learning from this research, you will be able to provide better care to this patient population.

Confidentiality: We assure you that your responses will be kept confidential. The software used for the administration of this survey helps in maintaining anonymity of the survey responses. Your answers will be combined with other participants in this study and used only for statistical analysis. The researchers will make every effort to prevent

anyone who is not on the research team from knowing the information that you provide. Although we will make every effort to protect your confidentiality, there is a low risk that this might be breached.

Voluntary Participation: Your participation in this study is completely voluntary and refusal to participate will involve no penalty or loss and will not affect your relationship with the University of Toledo.

 Contact Information: Before deciding to accept this invitation of taking part in this study, you may ask any questions that you might have. If you have any questions at any time before, during or after your participation you can contact a member of the research team.

Neha S. Gangal

neha.gangal@rockets.utoledo.edu

 614-371-3513

Dr. Monica Holiday-Goodman

monica.holiday-goodman@utoledo.edu

419.383.1968

If you have any questions beyond those answered by the research team, the Chairperson of the SBE Institutional Review Board may be contacted through the Office of Research on the main campus at (419) 530-2844.

Before you start the survey, please ask any questions on any aspect of this study that is unclear to you. You may take as much time as necessary to think it over.

CONSENT SECTION – Please read carefully

You are making a decision whether or not to participate in this research study. Your completion of the survey will indicate that you have read the information provided above and you have decided to take part in this research.

The date you complete the survey in order to enroll in this study, that is, today's date must be after the date indicated at the bottom of the page.

University of Toledo IRB Approved Approval Date: 02/13/13

Survey

Identifying Pharmacist's Perception, Knowledge and Perceived Barriers towards proving care to Patients taking Anti-psychotics.

Please check the option that best describes your level of agreement with the following statements.

1. Patients taking anti-psychotics are unreliable.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree
- ○ Neutral

2. Patients taking anti-psychotics get all necessary information about their disease from their psychiatrist.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree
- ○ Neutral

3. Patients taking anti-psychotics get all necessary information about their medications from their psychiatrist.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree
- ○ Neutral

4. I follow up with patients to be sure they get their anti-psychotics refilled.

○ Strongly Agree

○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

5. I provide support and listen to the patient.

○ Strongly Agree

○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

6. I advise patients to consult their doctor when I recognize severe side effects.

○ Strongly Agree

○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

7. Pharmacists' participation in counseling patients on anti-psychotics is an important step in patient care.

○ Strongly Agree

○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

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8. My patients will trust me more if I provide counseling.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

9. Counseling will attract more patients to my pharmacy.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

10. Involvement in counseling will improve my job satisfaction.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

11. If patients in my community need counseling, it will motivate me to do so.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

12. If physicians in my community want me to provide counseling, it will motivate me to do so.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree
- ○ Neutral

13. If other pharmacists in my community provide counseling, it will motivate me to do so.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree
- ○ Neutral

14. I feel confident about my expertise to provide counseling to patients with psychiatric disorders on his or her medication.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree
- ○ Neutral

15. I feel confident that I can make time to provide counseling to patients with psychiatric disorders.

- ○ Strongly Agree
- ○ Agree
- ○ Disagree
- ○ Strongly Disagree

○ Neutral

16. I intend to provide counseling to patients taking anti-psychotics.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

17. I will provide written information to patients on anti-psychotics about their medications and their side effects.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

18. I intend to initiate conversation with patients who take anti-psychotics.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

19. I intend to attend continuing education programs on the appropriate use of anti-psychotics.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree

○ Neutral

What is your level of agreement that following are barriers in providing care to patients taking anti-psychotics?

20. Lack of education in mental health issues.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

21. Lack of time for individual attention to patients.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

22. Lack of privacy in pharmacy to discuss personal issues.

○ Strongly Agree
○ Agree
○ Disagree
○ Strongly Disagree
○ Neutral

23. Difficulty in communicating well with the patients on anti-psychotics.

○ Strongly Agree
○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

24. Patients taking anti-psychotics do not want to talk to their pharmacist about their disease.

○ Strongly Agree

○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

25. Participating in counseling will increase my stress level.

○ Strongly Agree

○ Agree

○ Disagree

○ Strongly Disagree

○ Neutral

26. Please specify other possible barriers.

Demographic Information

○ Below 25
○ 26-35
○ 36-45
○ 46-55
○ 56-65
○ Above 65

28. What is your gender?

○ Male
○ Female

29. What do you consider the best Source of gaining knowledge of antipsychotics?

○ Pharmacy Curriculum
○ Practice Experience
○ Continuing education sessions, Seminars, Meetings

30. How many years you practiced as a pharmacist?

○ Less than 5 years
○ 6-15 years
○ 16-25 years
○ Greater than 25 years

31. How many prescriptions does your pharmacy fill per day?

○ Less than 200 prescriptions
○ 201-400 prescriptions

○ 401-600 prescriptions

○ Greater than 600

○ Community Pharmacy

○ Hospital Pharmacy

Please do not refer to references or other resources to answer the following questions.

33. A 36 year old patient with a diagnosis of bipolar disorder is currently being treated with aripiprazole 30 mg per day and lithium 600 mg per twice per day. Both medications were started at the same time, about 3 months ago. The patient is also treated with losartan 50 mg per day for hypertension and metformin 1,000 mg twice per day for type 2 diabetes. The patient is complaining of a 40 pound weight gain over the past 2 months. Which of the following medications is most likely to lead to weight gain?

○ Aripiprazole

○ Lithium

○ Losartan

○ Metformin

34. A 47 year old male patient taking risperidone 2 mg twice per day, lamotrigine 200 mg/day, and alprazolam 0.5 mg twice per day is started on paroxetine 20 mg/day. At his outpatient clinic visit 2 weeks later, he complains that his hands are now shaking when they are at rest. On exam, he is noted to have a shuffling gait and cogwheel rigidity. What is the cause of these symptoms?

○ Paroxetine inhibition of risperidone metabolism

○ Risperidone inhibition of lamotrigine metabolism

○ Alprazolam inhibition of risperidone metabolism

○ Lamotrigine inhibition of paroxetine metabolism

35. A 51 year old female with a 25 year history of schizophrenia presents to the outpatient psychiatry clinic for follow-up with her illness. She is doing well on her current anti-psychotic medication regimen, but the clinician notices that she is repeatedly blinking her eyes, has facial grimacing and tongue protrusion. Which of the following is the correct diagnosis of these symptoms?

○ Akathisia

○ Tardive dyskinesia

○ Pseudo parkinsonism

○ Dystonia

36. A patient with schizophrenia was started on risperidone 2 mg per day approximately 3 months ago. The dose has been titrated upward during this time and was increased to a total of 6 mg per day of risperidone 2 weeks ago. He arrives at the psychiatry outpatient clinic today for follow-up. He is noted to be pacing in the waiting room and the clinic staff reports that he is unable to sit still when seated. The patient reports to the doctor that he feels he is "coming out of his skin". Which of the following is the most appropriate choice to treat this patient's symptoms?

⦿ Bromocriptine

○ Propranolol

○ Trihexyphenidyl

○ Amantadine

37. You are called to see JM, a patient on your unit, who has developed torticollis and gloss spasm that is related to anti-psychotic administration. Which of the following medications should JM receive to ameliorate this side effect?

○ Bromocriptine

○ Amantadine

○ Diphenhydramine

○ Lorazepam

38. Which of the following agents are approved for monotherapy for bipolar depression?

○ Lithium

○ Quetiapine

○ Fluoxetine

○ Risperidone

39. Which of the following is NOT an FDA indication for the use of risperidone?

○ Schizophrenia

○ Bipolar mania

○ Aggression

○ Autism