

## **Barriers to therapeutic regimen adherence of type II diabetes mellitus patients in Iligan City, Philippines**

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**Abstract.** The purpose of this study is to explore the barriers that have an impact on the adherence to therapeutic regimen among Type II diabetics in Iligan City. Specifically, it attempted to evaluate if there's a significant relationship among the patients' length of diagnosis, blood sugar level, awareness of the disease, their relationship towards their doctors and the availability and accessibility to healthcare services as to their adherence to therapeutic regimen in terms of their medication, diet, exercise, lifestyle and stress reduction techniques. It also tried to examine if the patients' profiles (age, gender, religion, civil status, educational attainment, work status, family monthly income, social support system and clinic) can influence their therapeutic regimen adherence. This study used the Descriptive Survey Method. 10 self-structured questionnaires derived from published questionnaires were given to 56 Type II diagnosed diabetes mellitus patients in the private and public clinics of Iligan City, selected through random sampling technique. Data generated by the questionnaires were analyzed using descriptive statistics and correlations. Results from the survey showed that the patients' accessibility to healthcare services and their social support system largely affect their medication adherence. Female and working patients are more diligent in taking their medication. Patients having their consultation in the public clinic and those with lower blood glucose level prove to have a better performance in lifestyle modification. Patients who are married, working, and who are more aware about their disease showed to be more effective in reducing stress than the other patients. Patients in the public clinic exercise more than those in the private clinics. Finally, the frequency in which the patients were doing exercise is greatly affected on how efficient their healthcare providers are.

**KEYWORDS:** Barriers, Adherence to Therapeutic Regimen, Accesibility to health care services, social support system, reationship of the health care provider and patient

### **Introduction**

According to United Nation, 2012), every 10 seconds, two people are diagnosed with diabetes, and one person dies from diabetes-related causes. Diabetes is a lifelong disease that can affect anybody from all walks of life. Once diagnosed, patients are mandated to control their caloric intake as well as to modify their lifestyle in order to prevent life-threatening vascular, nephrologic, neurologic and ophthalmologic complications that ultimately lead to death (Weinger, K& V Carver, 2009). According to Sommers et.al.2007, diabetes mellitus (DM) is a chronic disorder of carbohydrate, protein, and fat metabolism in which there is a discrepancy between the amount of insulin required by the body and the amount of insulin available. Its cases have grown dramatically over the past decades. Adherence to therapeutic regimen is one of the factors considered to improve the health status of diabetic patients. Poor adherence is also one of the main reasons for the increasing mortality rates.

## **Materials and Methods**

This study employed a non-experimental research design which specifically used the Descriptive-Correlational Method. In this study, ten self-structured questionnaires were given to 23 respondents who served as the pilot study of this research. Data generated through the pilot were validated through Cronbach's alpha, with a result of greater than 0.7 and this is interpreted as acceptable (George & Mallery, 2003). Questionnaires were then given to the 56 Type II diagnosed diabetic respondents in the private and public clinics of Iligan City selected through random sampling.

## **Results and Discussion**

### **Significant relationship between respondents profile and adherence to therapeutic regimen**

This study has found out that there is a significant relationship between Gender and Work Status to their adherence on Medication. Females have a high level of adherence to medications compared to male diabetics. Some perceive that the women's concerns about their health and greater use of health care services to be due to "over anxiousness" (American Medical Association Council on Ethical and Judicial Affairs, 1991). Men tend to be "under anxious," ignoring symptoms or illness and under using health care (Verbrugge, 1985). Working diabetics adhere more on their medication regimen as compared to non – working diabetics.

Table 1. Significant Relationship between Adherence to Medication and Demographic factors

	Contingency Coefficient	P value	Conclusion
	0.122		
Clinic	0.329	0.656	Not Significant
Gender	0.036	0.033	<b>Significant</b>
Religion	0.087	0.964	Not Significant
Civil Status	0.325	0.810	Not Significant
Work status		0.037	<b>Significant</b>

Table 2. Significant Relationship between Medication Adherence to Social Support System and Accessibility to health care services

	Spearman Rho Coefficient	P value	Conclusion
Social Support System	0.293	0.028	Significant
Accessibility to Healthcare Services	0.452	0.000	Significant

Another finding of this study is that there is a significant relationship between social support to their adherence on medication. This implies that when the social support system of the respondents is excellent their adherence on medication is also excellent. Social support can have a direct effect or a buffering effect on health, and supportive relationships are key factors in promoting physical and emotional health (Ford, et.al., 1998). Moreover, accessibility has a direct impact on the respondents' adherence on their medication, which implies that when the accessibility of the respondents is excellent, their adherence on medication is also excellent. Medications are vital to control diabetes; Due to a lack of resources, which is apparent especially in poor countries, appropriate interventions to diseases may not be provided at all. Economic resources are often insufficient to support the provision of essential services such as that of providing the medications for the disease. Insufficient resources, inappropriate allocation, and inadequate quality are major impediments to the delivery of effective health care that reaches the poor. The access problem cannot be solved without tackling each of these deficiencies. (O'Donnell, 2007)

Table 3. Significant Relationship between Exercise and Demographic factors

	Contingency Coefficient	P value	Conclusion
Clinic	0.423	0.016	Significant

The clinic where the respondents sought consultations significantly contributed to the respondents' adherence on exercise. Adherence to exercise is better from clients having consultation in public clinics rather than those in the private clinics. It appears, then, that practitioners may greatly help their patients by prescribing an appropriate duration, intensity, and type of exercise. However, how can they find the time to do it during limited office visits? One answer is that there may be alternate, time-saving ways to perform this care task. In a recent study, researchers found that a brief intervention to increase dialogue between patients and health care providers about behavioral goals can lead to increased physical activity and weight loss. In that study, patients were able to set self-management goals for nutrition and physical activity in about ten minutes, and their goals were then

briefly reviewed at each clinic visit to provide reinforcement and continued motivation for participation (Christian, et. al., 2008). It is evident that public clinics have been more efficient in improving diabetes care especially in doing exercise, devoting their time, effort, and resources to interventions that work best for their patient populations who are mostly impoverished.

Table 4. Significant Relationship between Barriers to Therapeutic Regimen and Exercise

	Spearman Rho Coefficient	P value	Conclusion
Health Care Provider-Patient relationship	0.344	0.009	<b>Significant</b>

### **Health Care Provider**

Patient relationship is also significantly related to their adherence on exercise which implies that when the health care provider-patient relationship is excellent the level of exercise of the respondents is also excellent. Although patients are responsible for their own decisions and self-care behaviors, patient outcomes are also affected by health care providers' behaviors. To be most effective at health behavior change, health care providers should have a patient-centered approach, establish rapport, convey genuine interest in patients, cultivate a collaborative relationship, communicate clearly, and provide directives (advice) when patients are ready to hear and learn more about the new recommendations (Ford, et. al., 1998).

Table 5. Significant Relationship between Lifestyle Modification and Demographic factors

	Contingency Coefficient	P value	Conclusion
Clinic	0.372	0.029	Significant

The clinic where the respondents sought consultations contributed to the respondents' adherence on Lifestyle Modifications. Those having consultations in public clinic is slightly better in their lifestyle modifications than those in private clinics. A survey conducted by the Consortium for Quality Improvement in Safety Net Hospitals and Health Systems was convened by the National Public Health and Hospital Institute with support from the Commonwealth found that even though public hospitals provide care to a very large volume of underserved patients, they are able to maintain quality care for diabetes patients. In fact, the seven public hospital systems included in the study had patient outcomes comparable to -- and in some cases, better than -- the national average for diabetes care. Two-thirds of diabetes patients at these seven public hospitals maintained moderate control of their diabetes. Patients at these hospitals also had cholesterol levels

that were similar to or better than those of patients in national surveys, the researchers found. "These findings show that public hospitals have established effective programs for patients with diabetes. While there is room for improvement, public hospital systems can effectively manage long-term chronic conditions," study author Marsha Regenstein, director of the National Public Health and Hospital Institute.

Table 6. Significant Relationship between Adherence to Stress Reduction Techniques and Demographic factors

	Contingency Coefficient	P value	Conclusion
Civil Status	0.516	0.016	Significant
Work Status	0.344	0.048	Significant

Another remarkable finding of this study is that both civil status and work status of the respondents' have a direct relationship with their adherence on their Stress Reduction Techniques. Married respondents tend to have high level of adherence stress reduction technique compared to single, divorced, and widowed respondents. A study posted on Singapore Med Journal 2008 by Azimi-Nezhad et al, suggests that single, divorced and widowed statuses constitute potentially adverse health effects and that married individuals buffer against stress. Thus, married patients have better performances in stress management than the others. This could be due to the fact that married patients have spouses/ partners that could encourage them to relax and support them all throughout. Working respondents have high level of stress reduction technique compared to non-working respondents. Hence, based on these results, working respondents tend to have high level of stress reduction technique compared to those non-working respondents. This could be due to the fact that working respondents have been accustomed to the numerous amount of pressure at work; thus, they realize the need to rest, so most of them highly apply this stress reduction technique.

Table 7. Significant Relationship between Barriers to Therapeutic Regimen and Stress Reduction Techniques

	Spearman Rho Coefficient	P value	Conclusion
Health Awareness	0.466	0.000	Significant

There is a significant relationship between the health awareness of the respondents and their level of stress reduction techniques, which implies that when the health awareness of the respondents is high, the level of stress reduction techniques of the respondents is also high. According to the National Diabetes Education Program (NDEP), nearly six million people who have the disease don't even know it (San Francisco Chronicle, 2010). In Surwit's new book, "The Mind-Body Diabetes Revolution," he explains how stress causes the

release of our “fight or flight” hormones, which spur the release of stored glucose or fat into the bloodstream. Without enough insulin to balance the glucose or fat, blood glucose goes high. Unfortunately, most people with diabetes don’t recognize that stress may be causing this reaction in the body. Also, to make matters more complicated, some people with diabetes whose blood glucose levels are low during a moment of stress, experience their glucose dropping even lower, rather than rising (Diabetes Health, 2005). These results imply that awareness affects the respondents’ coping mechanism to stress. The more they are aware about their disease, the more they are able to cope well with stress.

### **Conclusions**

Based on the results of this study, these are the identified Barriers to Therapeutic regimen Adherence of Type 2 Diabetes Mellitus Patients in Iligan City namely, Low accessibility to health care services which has a direct relationship on their medication adherence, Poor Health care provider – patient relationship which has a significant impact on their adherence on exercise and lastly, low level of health awareness which has a direct relationship on their adherence on stress reduction techniques. Moreover, male, single, divorced, widowed, nonworking, and private clinics patients are less adherent to therapeutic regimen of the said disease.

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