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ARTICLE REVIEW: EFFECT OF COUNSELING ON QUALITY OF LIFE IN TYPE-2 DIABETES MELLITUS PATIENTS

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ABSTRACT

Quality of life is a general term for health status, although the term also has a special meaning that ranks the population according to objective and subjective aspects of health status. A disease that reflects a lot of quality of life related to a person's disease is diabetes. Many countries have explained that diabetes is a disease that is serious enough to cause high mortality. PubMed, Science Direct, and Google Scholar are several sources of articles used in searching for information regarding the effect of counseling on the quality of life of Type 2 Diabetes Mellitus patients. The majority of the articles used are the most recent articles written within the last 10 years, namely from 2013 to 2023. The keywords used in the search for these journals were “pharmacy interventions”, “patient counseling”, “quality of life”, “type 2 diabetes mellitus”. Intervention by pharmacists significantly improves the quality of life of type 2 diabetes mellitus patients. Similar studies have been conducted by researchers in several countries. It has been proven that the quality of life of patients with type 2 diabetes mellitus is significantly improved by clinically mediated pharmacist interventions on medication, illness, nutrition, exercise, lifestyle change, and self-care practices in the management of diabetes,. Through counseling that promotes patient trust and compliance, pharmacists play a crucial role in educating patients. It has an effect on patient satisfaction with DM therapy as well as on improving quality of life. Patients have high expectations for pharmacist education. It is believed that pharmacists can provide the information that DM management requires.

Keywords: Quality of Life, Diabetes Mellitus, Patient Counseling, Type II Diabetes.

INTRODUCTION

Quality of life is a general term for health status, although the term also has a special meaning that ranks the population according to objective and subjective aspects of health status. Health-Related Quality of Life Health-related quality of life (HQoL) includes physical and psychological functional limitations as well as positive manifestations of physical, psychological, and spiritual health. HQoL can be used as a comprehensive measure of mortality and morbidity and is an indicator of multiple components, including mortality, morbidity, functional limitations, and well-being.

The phrase "quality of life," or QoL, is also used. The Centres for Disease Control and Prevention (CDC) in the United States define quality of life as a multifaceted notion that encompasses assessing both the positive and negative facets of an individual's life. Since the 1980s, those facets of QoL that can be demonstrated to have an impact on physical or mental health have been referred to as “health-related quality of life” (HRQoL). Human Resources Quality of Life (HRQoL) includes perceptions of physical and mental health (health conditions, social, and economic status), as well as situations at the community level (practises that influence perceptions of health and functional status). The CDC defines HRQoL as "the perceived physical and mental health of an individual or group over time" in light of the aforementioned (Schweyer, 2015).

The disease that is highlighted by the quality of life related to a person's disease is diabetes. It has been highlighted by many countries because diabetes is a disease that is serious enough to cause high mortality. The prevalence of DM (diabetes mellitus) is increasing worldwide in all age groups. The number of diabetes cases worldwide is estimated to reach 285 million in 2010, with about 80% of cases occurring in developing countries. According to the World Health Organisation, the number of people with type 2 diabetes in Indonesia will increase from 8.4 million in 2000 to 21.3 million in 2030 (Soelistijo, 2021).

Because DM is a lifelong condition with a slim prospect of recovery, it is crucial to enhance the quality of life for those who suffer from it. It is true that improving quality of life (QoL) is the primary objective of early diagnosis and treatment of diabetes. Although the word "quality of life" (QoL) is still unclear, it is generally accepted that it has four components: social, mental, cognitive, and physical. The four components have all been covered in a number of articles.

15,500 articles and reviews on diabetes and coronary artery disease, 16,100 articles and reviews on diabetes and renal function, 28,900 articles and reviews on diabetes and retinopathy, 16,800 articles and reviews on diabetic foot ulcers, and another 26,300 articles and reviews on diabetic neuropathy have been published in the recent five years. Additionally, 24,500 publications discuss the connection between diabetes and depression, while 17,200 articles discuss diabetic sexual dysfunction. There is global interest in the following topics: 17,500 on diabetes and dementia, 1 on diabetes and family functioning, and 1,950,000 on diabetes and quality of life. Numerous general and disease-specific psychometric tests have been created by researchers to address these metabolic abnormalities and their effects. The scientific community is beginning to understand the terrible impact diabetes may have on patients' lives with the aid of these psychometric techniques (Schweyer, 2015).

Coronary artery disease leads the list of complications that reduce health-related quality of life (HRQoL) but are unrelated to risk factors (genetic, birth weight, or other), followed by renal failure, blindness, and a combination of microvascular and macrovascular complications, as well as sexual dysfunction in some studies. The impact of diabetes on a patient's life is further exacerbated by a variety of comorbidities. The most prevalent of them are obesity, hypertension, dyslipidemia, depression, and arthritis. The relationship between diabetes and depression, and in certain cases, the development of dementia, is the area of research that is most exciting. Researchers are examining a wide range of factors and sets of actions in relation to raising HRQoL scores. The studies that have been done so far have found little to moderate benefit (Schweyer, 2015).

Though there is no universal agreement among scientists, most agree that QoL encompasses a wide range of factors, as previously mentioned, and should be assessed through patients' perceptions of their level of happiness or lack thereof in their lives, despite the fact that the answers to the questions surrounding happiness and QoL are undoubtedly unclear. HRQoL is a crucial and closely related aspect of QoL. The two ideas are frequently mistaken for one another or taken to be synonymous with one another or with well-being, which is obviously incorrect. The idea of disease- specific QoL as a goal of treatment and a crucial element of therapy has gained more attention in recent decades. The entire approach to treating diabetes has shifted from being patient-centred to doctor-centred.The focus of the current ADA-EASD guidelines is on patient and physician collaboration in making treatment decisions. The HRQoL questionnaire has simultaneously grown to be a significant part of public health and is regarded as a reliable indicator of intervention outcomes and a potent predictor of death and morbidity (Schweyer, 2015).

Various epidemiological studies have shown that when you have diabetes, you should control your blood sugar levels as much as possible to prevent diabetes complications and hopefully live a normal life with diabetes. Therefore, controlling blood sugar levels is very important for people with DM. Blood sugar levels can be controlled with drug and non-drug therapy. Pharmacological treatment includes the use of oral hypoglycemic agents and

insulin, while non-pharmacological treatment includes education, diet, and self monitoring blood glucose(SMB). DM cannot be cured, but it can be managed. DM sufferers must take medication for life. DM sufferers often get more than one drug because not all DM sufferers know their illness. The patient's lack of knowledge about the treatment he is currently undergoing can increase patient non-compliance.

Various studies have shown that patient adherence to chronic disease treatment is very low. Studies involving outpatients show that more than 70% do not take their dose (Chowdary & Aanandhi, 2018).

According to a report by the World Health Organisation (WHO), the average adherence to long-term treatment of patients with chronic diseases in developed countries is only 50%, even lower in developing countries (Roger & Walker, 2010). Successful management of diabetes requires close and integrated cooperation from sufferers and their families with the health workers who handle them, including doctors, pharmacists, and nutritionists. The important role of the pharmacist in providing counselling to help manage diabetes becomes more meaningful.

Counseling is a form of implementation of pharmaceutical care. Pharmacists must interact with patients and other health workers to increase patient knowledge of their disease. Increasing patient knowledge of the disease is expected to increase the success of pharmacological and non- pharmacological therapy, so that the patient's quality of life can increase (Chowdary & Aanandhi, 2018).

Studies measuring changes in people's knowledge, attitudes, and practices as a result of certain interventions, typically outreach, demonstrations, or instruction, are known as knowledge, attitude, and practice (KAP) studies. Community, paramedic, and medical professional attitudes and behaviours about a specific subject. This demonstrates an improvement in understanding, a shift in attitudes towards diabetes and hypertension, as well as a shift in the kinds of practices used to control diabetes and hypertension (Chowdary & Aanandhi, 2018).

RESEARCH METHODS

PubMed, Science Direct, and Google Scholar are several sources of articles used in searching for information regarding the effect of counselling on the quality of life of Type 2 diabetes mellitus patients. The majority of the articles used are the most recent articles written within the last 10 years, namely from 2013-2023. The keywords used in the search for these journals are“pharmacy intervention”, “patient counseling”, “quality of life”, “diabetes mellitus type 2”,The initial number of articles found was 30. The article then resulted in 18 articles (published from 2012 to 2022) that provide information on the prevalence of type 2 diabetes mellitus, influence of counselling by pharmacists, and pharmacist interventions to increase quality of life (QoL). The selection of these articles is based on internationally published and Scopus indexed journals.

The contrast approach was employed in this article review. The comparison approach is a technique for evaluating journals and articles that involves identifying contrasts across several research journals before forming conclusions. The prospective intervention study, which aims to evaluate the impact of patient counselling offered by pharmacists on the knowledge, attitudes, practices, and quality of life of type-2 diabetes mellitus patients, is the approach that is frequently employed in the papers that will be examined. Patients in the control and test groups are evaluated for their knowledge, attitudes, habits, and quality of life during the data extraction procedure. The knowledge, attitude, and practices questions from the KAP/SF-36 questionnaire are likely to be used for this assessment. Following a statistical analysis of the questionnaire results, the effects of patient counselling on these variables were assessed. To reduce bias, inclusion and exclusion criteria were established.

Inclusion criteria:

1. Patients with type 2 diabetes mellitus
2. Patients in the age group above 20 years
3. Outpatients and inpatients were included.

Exclusion criteria:

1. Patients in the age group below 20 years.
2. Patients with liver disease and patients undergoing complicated surgery.
3. Pregnant women and nursing mothers.

These criteria were used to select patients for research based on specific characteristics relevant to the research question. Patients who met the inclusion criteria were included in the study, while patients who met the exclusion criteria were not included.

RESULTS AND DISCUSSION

Diabetes mellitus is a developing global public health problem. It burdens people personally, has a negative effect on health-related quality of life, and consumes worrisome amounts of resources in terms of public health care. A person's life is negatively impacted by this adverse outcome in a variety of ways, including the social and psychological aspects of managing a chronic illness, dietary restrictions, indications of poor metabolic control, persistent issues, and permanent disability (Valentine *et al*., 2022). Diabetes is still a serious problem in our time. The primary therapeutic objective of overcoming the epidemic's obstacles is to improve quality of life (QoL). Despite disparities in terms of race, environment, financial class, gender, culture, diet occupation, and lifestyle behaviours, diabetes affects the main aspects of QoL. Numerous studies have been conducted within that context throughout the world, and they have revealed mild to moderate benefits in various components (Schweyer, 2015).

Patient adherence to strict dietary, exercise, self-care, and pharmaceutical regimes is crucial for treating diabetes. Diabetes patients who have co-morbidities frequently utilise polypharmacy, which increases the risk of drug-related issues such as adverse drug responses, drug interactions, medication non-adherence, a lack of sufficient medical justifications, and so forth. The active participation of various healthcare professionals, including pharmacists, is necessary for the management of patients with Type 2 Diabetes Mellitus. Pharmacists who specialize in treating these persistent, developing illnesses can significantly and favorably affect patients and the healthcare system QOL (Mahwi & Obeid, 2013).

The major goal of this article review is to summarize and assess how pharmacist counseling affects patients with type 2 diabetes mellitus' quality of life (QOL). The goal of this article review is to inform readers on how to use and store medications, as well as how to improve their lifestyles and follow prescription drug regimens. This article review also seeks to analyze patient QOL using questionnaires before and after intervention, as well as examine patient characteristics including gender, age, education, occupation, and length of illness. The aim of this article is to help facilitate future research for other researchers.

Pharmacists are aware of how the practice of pharmacy has changed over time, expanding to include interactions with patients and other healthcare professionals through the provision of pharmaceutical services, in addition to the dispensing and administration of medications to patients. Patient counseling's primary purpose is to enhance a patient’s quality of life and deliver high-quality care. Counseling is an empathic exchange between a pharmacist and a patient that can go beyond simply discussing medications and when and how to take them. Patient counseling offers significant advantages to patients in several additional areas, including improved results and treatment satisfaction (Roger & Walker, 2010).

According to (Direktorat Bina Farmasi Komunitas dan Klinik, 2007), a pharmacist's primary job in pharmaceutical employment is to provide pharmaceutical care, which is a type of service that aims to enhance patients' quality of life. It was shown that counseling had a proven positive impact on patient understanding of the causes and symptoms of diabetes, complications that can develop in diabetics, and the danger of high blood pressure in diabetics. Patients who are receiving counseling are also instructed on how to change their behaviors to better control their diabetes and hypertension.

A prospective intervention study was used in this investigation. A patient information leaflet is part of the intervention model. After recording the pre-counselling data, the

researchers offered counselling using this leaflet. Control and test groups were created from the chosen patients. Patients are instructed on how to use and store drugs as well as how to adjust their lifestyles (including their eating and exercise habits). Gender, age, education, occupation, length of sickness, and usage of antihyperglycemic medications were among the patient variables evaluated in this study using patient medical data. The SF-36 questionnaire, which each patient completed in the good, fair, or poor categories, was used to evaluate each patient's QOL (Syarifuddin *et al*., 2019).

Patients in the control and test groups are evaluated for their knowledge, attitudes, habits, and quality of life during the data extraction procedure. The knowledge, attitude, and practice questions from the KAP/SF-36 questionnaire are likely to be used for this assessment. Following a statistical analysis of the questionnaire results, the effects of patient counselling on these variables were assessed. To reduce bias, inclusion and exclusion criteria were established.

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Exclusion criteria:

1. Patients in the age group below 20 years.
2. Patients with liver disease and patients undergoing complicated surgery.
3. Pregnant women and nursing mothers.

These criteria were used to select patients for the study based on specific characteristics relevant to the research question. Patients who met the criteria for inclusion were included in the study, but those who met the criteria for exclusion were not.

The impact of pharmacist counselling on diabetic patients with hypertension's awareness of their disease, pharmaceutical therapy, and lifestyle changes, i.e., disease management (blood sugar and blood pressure levels), and quality of life, are also evaluated in this paper. The test group's mean knowledge scores before and after counselling showed a significant difference when patient knowledge and practice attitudes were compared. There was no discernible difference in the control group's average score that was significant (Chowdary & Aanandhi, 2018).

Patients learn more about:

1. The causes and signs of diabetes.
2. Diabetes complications.
3. The possibility of elevated blood pressure in people with diabetes.
4. To control diabetes and hypertension, lifestyle changes are required.

Knowledge, attitude, and practice (KAP) studies are narrowly focused evaluations that track how people's knowledge, attitudes, and behaviours change in response to particular interventions, typically public outreach, public demonstrations, or educational programmes. Community, paramedic, and medical professional attitudes and behaviours about a specific subject. This demonstrates an improvement in understanding, a shift in attitudes towards diabetes and hypertension, as well as a shift in the kinds of practices used to control diabetes and hypertension (Chowdary & Aanandhi, 2018).

Table I. Journal Review Results

Journal Citation	Research Methods	Intervention	Research Result
(Chowdary & Aanandhi, 2018)	A prospective intervention study with the objective of evaluating the effects of patient counselling offered by pharmacists on patients' knowledge, attitudes, behaviours, and quality of life. A total of 55 patients participated in this trial after meeting strict inclusion and exclusion requirements.	A total of 55 patients participated in this trial after meeting strict inclusion and exclusion requirements. Patients were split into two groups: a control groupand a test group. The test group received counselling and knowledge about managing the disease, whereas the control group only received information after the conclusion of the study. The patient's KAP and quality of life were evaluated over a six-month follow-up period.	Patient counselling improves the health and quality of life of patients with hypertension and type II diabetes mellitus. It was shown that more awareness about the condition and its treatments was significantly correlated with better treatment outcomes and quality of life. Patient counselling was found to be particularly beneficial for the patient's physical quality of life. However, there was little change in the summary of their quality of life's mental features. Additionally, there was a significant difference in the test group's mean systolic and diastolic blood pressure scores as well as blood sugar levels between before and after counselling.
(Syarifuddin *et al*., 2019)	A six-month analytic cohort research design was adopted in this study. We evaluated patient characteristics from their medical records, including gender, age, education, occupation, length of illness, and usage of antihyperglycemic medications. By employing a paired t-test to compare the quality of life of patients before and after education, the significance of the pharmacist's intervention was examined.	There were 130 patients listed as the research target population. In this study, patient education is given with a focus on dietary and lifestyle changes, adherence to prescription medications, and safe handling and storage of pharmaceuticals. To evaluate the quality of life (QOL) of the patients, the researchers used a self-created questionnaire and a 36-item short form survey (SF-36) instrument. Each visit, the patient's QOL was noted, and the information required to analyse the patient's QOL was gathered at the patient's last appointment for three months.	By comparing the quality of life before and after education using a paired t test, the effect of pharmacist intervention on enhancing the quality of life of patients was evaluated. Patients with type 2 diabetes mellitus will live better thanks to the research. Patients are given instructions on how to adjust their lifestyles, remember to take their medications as directed, and utilise and store their medications properly. According to this study, pharmacist interventions significantly improve the quality of life for those with type 2 diabetes mellitus.

Journal Citation	Research Methods	Intervention	Research Result
(Butt *et al*., 2016)	Study Design: Patients were assigned to the control group or the intervention group using a straightforward randomization approach in this randomised controlled trial investigation. Independent researchers collected the data from the control group, and pharmacists had no interaction with any of the individuals.	Patients with type 2 diabetes mellitus receiving care at UKMMC (Universiti Kebangsaan Malaysia Medical Center) participated in this study. Patients received counselling regarding diabetes, its complications, medication adherence, lifestyle changes, and self-monitoring of the disease as part of the pharmacist-led intervention. Face-to-face interventions are given, although patients who are unable to keep appointments are contacted via phone. The control group got normal care, including typical pharmaceutical care during medication refills every 2-3 months, standard medical care during patient-physician appointments every four to nine months, and referral to a diabetes educator nurse for diabetes-related education if needed. This study assesses how interventions affect glycemic control (as determined by the HbA1c level).	According to the intervention results in this study, the intervention group's HbA1c readings significantly decreased from 9.66% to 8.47%. This demonstrates how type 2 diabetes patients' glycemic control can be improved by pharmacist-led interventions in the management of diabetes mellitus. The study also demonstrates how type 2 diabetes patients' quality of life can be enhanced through pharmacist-led interventions in the management of diabetes mellitus. According to the study's findings, the intervention group's Morisky adherence score significantly increased from 5.83 to 6.77. The control group (5.95–5.98) showed no discernible improvements, nevertheless.
(Ramasamy *et al*., 2016)	A systematic review and meta-analysis are the research techniques used. To find pertinent studies of pharmacist-led interventions to increase medication adherence among people with diabetes, the authors conducted a thorough search of numerous databases. The	Studies include nations from all six continents. 27 studies were specifically carried out in Asia, 17 in North America, 7 in Europe, 4 in South America, 2 in Australia, and 2 in Africa. The included investigations were carried out in hospitals, community pharmacies, clinics, and other healthcare facilities. According to studies,	The most common intervention tactics employed by pharmacists are those that combine educational and behavioural components, while educational intervention strategies are also frequently utilised on their own. All outcome metrics are significantly improved by both techniques. These tactics are implemented via a variety of interventions, including instruction, advice, written and digital materials,

Journal Citation	Research Methods	Intervention	Research Result
	identified studies' titles and abstracts were next evaluated, and the studies that passed the inclusion criteria had their entire texts reviewed. The Cochrane risk of bias tool was used by the authors to evaluate the caliber of the included studies, and a meta-analysis was carried out to compile the findings. To investigate the characteristics related to effect sizes, subgroup meta-analyses and meta-regression meta-analyses were also carried out. For evaluating the caliber of systematic reviews, the PRISMA checklist served as a reference.	there are three basic types of interventions: educational, behavioural, and mixed (educational and behavioural). This plan tries to increase diabetic patients' medication compliance. After titles and abstracts were scrutinised, 135 studies initially satisfied the inclusion criteria. However, 59 studies in all were included in the systematic review after additional screening.	reviews of the patient's progress, and phone conversations. Although there were non-significant findings on any of the outcome measures (training or group discussion on blood tests other than HbA1c), this kind of individual pharmacist-led intervention significantly improved the overall outcome measures of patients with diabetes.
(Mahwi & Obeid, 2013)	This study used a prospective, randomised controlled trial as its research design. 130 patients with type 2 diabetes mellitus and a glycosylated haemoglobin level greater than 7.0% participated in this study. The study's overall design included randomization, intervention and control groups, numerous follow-up visits, and data collection on a range of medical and demographic characteristics.	The therapeutic group (n = 65) and the control group (n = 65) were formed from these patients. While the intervention group received both standard medical care and pharmacy treatment from pharmacists, the control group only received standard medical care. Three successive visits were used to monitor the patients in both groups. Patients were divided into the intervention and control groups using a straightforward randomization procedure in this study. With a gap of 5–6 weeks between each visit, the intervention group was followed up on for 3 visits. For ongoing follow-up, weekly	The findings demonstrated that type 2 diabetes mellitus patients receiving pharmacological therapy from pharmacists experienced meaningful gains in glycemic control. Particularly, when compared to the control group, the intervention group, which received both conventional medical treatment and pharmaceutical treatment, showed a statistically significant decline in glycemic levels. While receiving standard medical care, the control group, on the other hand, only slightly decreased their glycemic levels—a change that was not statistically significant. Additionally, this study discovered that the 108 identified drug therapy issues were resolved in part thanks to the intervention group's pharmacist

Journal Citation	Research Methods	Intervention	Research Result
		phone conversations were also conducted. General demographic information (such as name, age, gender, weight, height, address, and telephone number) and medical information (such as family history of diabetes, food or drug allergies, prior medical history, history of previous medications, and hypertension) are collected as part of the data collection process. likewise, hyperlipidemia). Using pill counts and the Morisky-Green test, process evaluation information about drug therapy and adherence problems was also gathered.	follow-up.
(Septiar & Utami, 2015)	In this study, a cross sectional design was the methodology used. Primary information was gathered from eight community health centers in Binjai City, Indonesia, that offer outpatient diabetes clinics. All outpatients who attended clinic days made up the study population, and a sequential sampling technique was utilised to collect the necessary 115 type 2 diabetes patients for the sample size. The WHOQOL-BREF questionnaire was used to assess quality of life, and HbA1c and	Role restrictions resulting from physical, emotional, social, and environmental health were examined using a Likert scale in four different categories. Blood sugar and glycated haemoglobin (HbA1c), which were measured using the Spectrophotometer Colorimeter + Full Automatic Method and the Doronad affinity technique + Modified HPLC, respectively, were used to measure the glycemic profile.	According to this study, nearly 80% of type 2 diabetes mellitus patients in Binjai City, Indonesia, had excellent quality of life (scores 81-100) in three areas: physical health, social relationships, and environmental health, but not in areas related to psychological health. Both the HbA1c and blood sugar readings (267.5 103.2 mg/dL and 9.9 2.3%, respectively) were above the normal range. The study also discovered that patients' quality of life improved as their glycemic index was properly managed.

Journal Citation	Research Methods	Intervention	Research Result
	blood glucose levels were used to gauge glycemic profile.		
(Deters *et al*., 2018)	Certain standards and procedures are used in the study selection and data extraction processes. Trials that did not relate to diabetes in terms of primary clinical and humanistic outcomes were excluded, as were trials in which the results of pharmacist treatments could not be assessed individually. Systematic reviews were carried out utilising the "Preferred Reporting Items for Systematic Reviews and Meta-Analysis" (PRISMA) statement. The PRISMA Statement, which includes suggestions for study discovery, screening, data extraction, and result synthesis, is a commonly used framework for conducting systematic reviews and meta-analyses.	This systematic review focuses on pharmaceutical care or MTM interventions for diabetic patients carried out by neighbourhood pharmacists or in community-based settings. It does not, however, offer an exhaustive summary of all the particular interventions included in the evaluation. It was mentioned that several interventional elements, such as evaluating a patient's medical history or referring them to a different healthcare provider, were taken into account in the meta-analysis.	Numerous findings from studies have been gathered regarding the effects of MTM or pharmacological care interventions given by community pharmacists to patients with type 1 or type 2 diabetes. According to meta-analyses, pharmaceutical treatment interventions result in statistically significant drops in A1C readings when compared to the control group in the intervention group. The largest impact of the variation in mean A1C values can be seen in the study by Mourao et al. The largest patient population is included in the meta-analysis by Krass et al., and this meta-analysis has the greatest influence on the variation in the meta-analytic mean. Inconsistency among studies, according to sensitivity analysis and heterogeneity evaluation, may not be significant.

The quality of life of patients with type 2 diabetes mellitus is greatly improved by pharmacist intervention. Similar experiments have been conducted by researchers from many countries. Additionally, it has been demonstrated that clinical pharmacist-mediated interventions on therapy, disease, diet, exercise, lifestyle modification, and self-care practices in the management of diabetes greatly improve the quality of life for patients with Type 2 Diabetes Mellitus (Shareef, 2016). Additionally, a study on people with type 2 diabetes mellitus in a military hospital in Myanmar demonstrated that pharmacist interventions significantly improved patients' average quality of life compared to those who did not, with a p-value of <0.001. Additionally, researchers found that there was a substantial rise in circumference, body mass index, and blood glucose concentration ($p<0.05$) (Maw *et al*., 2016). The fact that the quality of life scores for the intervention group were greater than those for the control group demonstrates how benefiting counseling is for those with type 2 prolanis patients. The Gedong Tengen Community Health Center's research discovered a strong link between pharmaceutical counselling and improving patients with type 2 diabetes mellitus' quality of life, and this study's findings are consistent (Septiar & Utami, 2015).

Research result Chowdary & Aanandhi (2018), studied the effects of pharmacist counselling on diabetic patients with hypertension's understanding of their disease, drug therapy, and changes in lifestyle, specifically disease management (blood sugar and blood pressure levels), and quality of life. The study included 47 patients, of whom 19 (40.43%) were female and 28 (59.57%) were male. Patients gain more information about the causes of type 2 diabetes mellitus and hypertension, its complications, the risk of developing high blood pressure in those who have it, and the lifestyle changes necessary for its management. Then, by frequently assessing their blood pressure and blood sugar levels and altering their habits, patients improve their practice. This demonstrates how patient counselling affects knowledge, patient attitudes, and practices, leading to efficient illness treatment. According to the statistical analysis, patient counselling has enhanced life quality in relation to the summary of the physical components (Chowdary & Aanandhi, 2018).

The belief that counselling is one type of pharmacological service provided by pharmacists then serves to support it. Drug counselling is the delivery and giving of drug-related advice in which there is a mutual exchange of views. Patients with chronic disorders like diabetes mellitus typically receive counseling. Giving patients with diabetes mellitus advice is crucial to enhancing their capacity for self-management. The inability to maintain long-term blood sugar control is a result of ignorance regarding the condition and available treatments. Lack of awareness about diabetes mellitus could lead to consequences that would be difficult for families and communities.

The quality of life for patients with type 2 diabetes mellitus is considerably enhanced by the engagement of pharmacists in their care. Clinical outcomes for patients are improved when patients have more information about their disease, food control, lifestyle changes, and appropriate medication use thanks to drug education and counselling provided by clinical pharmacists. The findings highlight how clinical pharmacist-mediated interventions on medication, illness, diet, exercise, lifestyle modification, and self-care practices can improve diabetes management with significant glycemic level reductions and improved quality of life in patients with type 2 diabetes mellitus. The advantages of integrating clinical pharmacist services into multidisciplinary teams for the entire care of diabetes mellitus in the hospice environment are well demonstrated by improved quality of life scores across various categories. The growth of initiatives like the diabetic quality improvement project is a step in the right direction, but there is still much to be done.

According to other studies, a study's shortcomings should be taken into account when interpreting the results. Due to the voluntary nature of study participation, this study may not be entirely representative of the overall diabetes community. The number of patients who received participation advice in the study, as well as the explanations for their exclusion from the study, were fully documented. The limited study period made it difficult to assess how long a positive result would last. This study includes data from the previous week to the preceding two months because there is no precise protocol for initial clinical value. It's

possible that the interval values recorded during the initial visit have changed. Better results will come from other research that examines outcomes at lower levels of flexibility. Patients who are unable to understand Malay or English are also excluded. Excluded patients could exhibit various clinical traits and manifestations (Butt *et al*., 2016).

According to research, patient counselling improves treatment results and quality of life for people with type II diabetes and hypertension. Future studies may examine various techniques or interventions for counselling patients in an effort to improve their efficacy and pinpoint the precise elements of counselling that have the biggest effects on patient outcomes. The focus of this study is on the interaction between pharmacists and patients as well as their role in dispensing medications. The results imply that incorporating counselling from pharmacists as a regular component of patient care can enhance recovery and quality of life. Health care systems in the future may consider incorporating pharmacist-provided counseling as common procedure for people with long-term diseases. According to this study, patient counselling had a favourable effect on the physical component of quality of life, but not on the mental component. Future studies may examine the creation of particular counselling strategies that cater to the unique mental health requirements of people with type II diabetes and hypertension, potentially resulting in improvements to these patients' mental well-being. This study assesses how counselling affects immediate results. Long-term follow-up studies to evaluate the sustainability of counselling's beneficial impacts on treatment results and quality of life may be the main focus of future research (Chowdary & Aanandhi, 2018).

CONCLUSION

The findings of this literature search confirm the data about counselling's positive impact on patients with type 2 diabetes mellitus' quality of life. Through counselling, pharmacists play a crucial role in educating patients and fostering their trust and compliance. It has an effect on patient satisfaction with DM therapy as well as on improving quality of life. Patients have high expectations for pharmacist education. It is believed that pharmacists can provide the information that DM management requires. Overall, along with clinical or physiological outcome measures, health-related quality of life is gradually becoming recognised as a therapeutic result. Because more understanding about the illness and how to treat it improves the effectiveness of treatments and the overall quality of life.

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