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MEDICATION ADHERENCE AND ITS ASSOCIATED FACTORS AMONG PATIENTS WITH ACUTE AND CHRONIC DISEASES IN DHQ TEACHING HOSPITAL, KOHAT

Mosam Ali[1], Muzamil Hussain[2], Hilal Hussain[3], Shahzad Ali[4], Abdul Wahab Khan[*5], Syeda Sana Bukhari[*6]

[1,2,3,4 *5 *6]*Crescent College of Nursing & Allied Health Sciences, KDA Kohat, Pakistan*

[1]mosamali13116@gmail.com, [2]muzamil2548@gmail.com, [3]hilalhussain1213@gmail.com, [4]shahzadahmad16211@gmail.com, [5]wahabwazir346@gmail.com, [6]sanabukhari9090@gmail.com

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Corresponding Author: *
Abdul Wahab Khan
Syeda Sana Bukhari

Abstract

Introduction: *The findings on medication adherence and its associated factors among patients with acute and chronic diseases. Health strategies require a demographic breakdown of gender, age, and other risk factors. Medication adherence remains a persistent challenge in healthcare, calling for a more patient-centered approach to effectively tackle it. Fast insight into patients' perceptions is essential for uncovering the underlying factors that shape their adherence behaviors.* ***Objectives:*** *To assess the epidemiological distribution of acute and chronic disease among male and female patients according to age groups.*

Methodology: *A hospital-based cross-sectional study, a total of 184 patients. Patients were categorized into four groups: 0-12, 13-30, 30-60 years, and above 60 years. Data were analyzed using statistical analysis software SPSS version 24.*

Results: *This study of 184 patients (56% male, 44% female) showed a higher prevalence of chronic diseases (71.5% in males, 78.0% in females) as compared to acute cases. Cardiovascular disease, kidney disease, and Diabetes mellitus were the most common among males' gender, while hernia, diabetes, and heart disease were the leading causes in females. Chronic disease cases were most frequent in the 30-60 years age group for both genders.*

Conclusion: *The aims of the study at DHQ Teaching Hospital & LMH, Kohat, are to examine adherence to medication among acute and chronic disease patients, which is a major challenge, undermining treatment effectiveness and escalating costs. In addition to effective solutions to increase medication adherence in Pakistan, further research is required to monitor medication adherence and identify variables contributing to this problem. Therefore, to improve medication adherence and general health status, scientists, nurses, and other healthcare professionals must pay close attention to these issues and develop suitable measures.*

INTRODUCTION

Medication adherence remains a major healthcare issue, with a noted lack of effective solutions. According to a 2003 World Health Organization report, adherence rates for patients with chronic conditions are as low as 50% even in developed nations (Sabaté et al., 2003). The extent to which a patient takes their medications as directed by a

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medical professional is measured and referred to as adherence. Patient concordance is when a patient and clinician work together to agree on a health plan. The patient actively helps shape the recommendations regarding treatment, diet, exercise, and other aspects of their care. A wealth of controlled trials exists on interventions aimed at improving adherence (Remington et al., 2006; Baroletti et al., 2010; Saleem et al., 2011). However, current strategies for improving medication adherence in chronic conditions are often complex and have limited efficacy (Haynes et al., 2005; Amankwaa et al., 2018). Earlier work, including systematic reviews, has compiled and analyzed the evidence from these trials. However, it appears that the complicated nature of medication adherence from the patient's point of view is still not fully addressed (Mbuagbaw et al., 2015).

Medication nonadherence directly undermines treatment effectiveness, leading to worse health outcomes (Rasmussen et al., 2007). This failure to follow prescriptions needlessly escalates healthcare costs for individuals and burdens society as a whole (Roebuck et al., 2011; Cutler et al., 2018). Medication adherence behavior has been explained by several kinds of perspectives. The most important social behavior model for explaining medication adherence in people with chronic illnesses is the information-motivation-behavioral skills (IMB) model. Patients' appropriate medication usage may be explained by the model. Patients might look for information from a variety of sources since they may not be aware of their condition or treatment to make a sound decision (Carpenter et al., 2010).

The model states that adherence behavior is determined by the following three dimensions: (i) Knowledge and understanding of the necessity of important behavior; (ii) Inspiration to make the requisite behavioral adjustments; and (iii) The necessary behavioral abilities of obtaining the desired behavior (Yang et al., 2020). However, undesired behavior and medication nonadherence may result from individual factors as well as organizational and system-specific obstacles (Reason, James, 2000). However, it appears that no explanation can fully account for a patient's drug adherence because adherence may also be influenced by outside circumstances.

Several studies have been conducted on medication adherence and related subjects; however, the majority were conducted in Western nations and produced inconsistent findings (Karakayalı et al., 2023). This study aims to understand why patients in District Kohat with acute and chronic diseases do or do not take their medications as prescribed. We are looking at how factors like a patient's age, background, and personal beliefs about medicine affect their adherence. The results will help guide the creation of better healthcare programs to improve the well-being of these patients.

Inclusion Criteria

Patients having a verified diagnosis of the acute or chronic illnesses included in your data (e.g., diabetes, CVD, GIT disorders, hernia, etc.) who come to the DHQ Teaching Hospital Kohat and Liaqat Memorial Hospital (LMH) in Kohat, regardless of age (pediatric to geriatric).

Materials & Methods

Study Design and Setting

A qualitative, institution-based, cross-sectional study was conducted in District Kohat, KPK, from December to February 2026, focusing on a secondary care hospital. As of a 2025 report by the Medicine and Healthcare Administration and Control, the city of Kohat has two hospitals providing this level of care, which are District Headquarter Hospitals Kohat (DHQ Hospital) and Liaqat Memorial Hospital (LMH). Additionally, DHQ Kohat employs 150 nurses with varied qualifications, while LMH Kohat has 50 nurses, also with differing qualifications, who are administered by the provisional government.

Study Area

Nurses were randomly selected from both District Headquarter Hospitals, Kohat (DHQ Hospital), and Liaqat Memorial Hospital, Kohat (LMH).

Ethical approval and consent to participate

The study protocol received ethical approval from the research ethical committee of the Institute of

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Crescent College of Nursing & Allied Health Sciences, Kohat, on December 1, 2025. Nurses participated voluntarily after being informed verbally about the study; they could refuse participation and be replaced during observation. The study included all nurses with at least a generic Bachelor of Nursing, diploma in nursing, master of Science in Nursing, and Doctor of Philosophy, with a minimum of one year of direct patient care experience.

Population size determination and sampling technique

A group of professional data collectors used a semi-structured pretested questionnaire (in both Urdu and English) to gather information. The number of nurse participants was estimated using a single population proportion formula, with an MAE rate of 71%. Participants from each hospital were selected using simple random sampling. Observational data were collected through continuous direct observation of nurses for 48 hours during medication administration to patients in the medical, surgical, emergency, and pediatric departments, etc. (Alemu et al., 2017).

The questions in the first section of the survey were designed to gather sociodemographic information about the respondents. Age, gender, income level, educational attainment, diagnosis, length of sickness, quantity and kind of drugs, and insurance status were among them. The second section of the questionnaire employed a self-reported questionnaire, Medication Adherence Report Scale, to evaluate the participants' adherence to their prescription drugs. Studies on a range of chronic conditions, such as type 2 diabetes, hypertension, and chronic obstructive pulmonary disease, have made extensive use of the MARS-5 (Alsous *et al.*, 2017). A self-reported questionnaire called the Beliefs about Medicines Questionnaire (BMQ-specific) was added in the third section. In more specific circumstances, including chronic diseases, this well-validated instrument is used to gauge patients' opinions and insights on a certain medicine (Horne et al., 1999).

Statistical analysis

The data were coded, cleaned, edited, and entered into EpiData version 4.2 and then exported to excel One-ANOVA for analysis. To control for potential confounders, all variables with $P \leq 0.25$ in the bivariable analysis were included in the final multivariable analysis model.

Results

There were 102 (56.0%) men and 82 (45.0%) females among the total 184 patients that were included in our study, as shown in Table 1. In both genders, chronic diseases were more prevalent than acute diseases overall.

3.1 Distribution of Patients According to Gender and Types of Disease

A total of 184 patients were included in the study. Out of 184, 102(55.7%) were males, and 82 (44.3%) were females. Chronic diseases more common in both genders as compared to acute diseases. Among the male patients, 73 (71.6%) had chronic and 29 (28.4%) acute cases. Similarly, 18 (22.0%) were acute, and 64 (78.0%) were chronic cases reported in females. The distribution is shown in the **table.1**

3.2 Distribution of Acute and Chronic Diseases Among Male Patients

Among the male patients, the most prevalent cases are diabetes mellitus (15 cases, 13.04%), followed by kidney, cardiovascular, and cerebrovascular disease (CVD), each with 14 cases. Osteopathy was observed in 6 cases (5.22%). GIT disorders accounted for 12 cases (10.43%), and infertility for 8 cases (6.96%), hepatitis and pulmonary disease for 7 cases each (6.09%). One of the lowest cases was noted for hernia, neurological disorders, and anemia (4 cases each, 3.48%), viral infection (3 cases, 2.61%), thyropathy (1case, 0.87%), and hypertension (2 cases, 1.74%). The average number of acute and chronic cases was 5.33 ± 4.43 and 2.33 ± 2.16, respectively. So, the overall mean for acute and chronic cases is 7.67 ± 4.89, with no statistical significance in disease number and frequency (p-value = 0.43). Shown in Table 2 b

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3.3 Distribution of Acute and Chronic Diseases Among Female Patients

Among the female patients, the most prevalent cases were diabetes mellitus (29 cases, 20.86%), followed by hernia (22 cases, 15.83%) and heart disease (12 cases, 8.63%). Arthritis and chronic kidney disease accounted for 8 (5.76%) and 7 (5.04%) cases, respectively. Nerve disorders were observed in 5 cases (3.60%), while hypertension and digestive ulcers represented 4 (2.88%) and 3 (2.16%) cases, respectively. Lower frequencies were recorded for asthma (2 cases, 1.44%), as well as tuberculosis and anemia, each with 1 case (0.72%). The mean number of acute and chronic cases was 1.55 ± 2.30 and 7.00 ± 7.43, respectively, yielding an overall mean of 8.55 ± 9.14. Statistical analysis revealed no significant association between disease category and disease frequency among female patients (χ^2 test, $p = 0.073$). **Shown in Table 3**

3.4 Epidemiological Distribution by Age and Gender

The epidemiological distribution of chronic and acute cases according to gender and age groups is shown in **Table 4.** The age group analysis showed that the chronic diseases were more prevalent in the 31-60 years >60 years and older age brackets for both genders. Acute cases were most frequent in the 13-30- and 31-60-year groups in males, while the female acute cases were distributed evenly across the younger age groups. The type of condition (acute vs. chronic) was not statistically significant (χ^2 test, $p = 0.277$).

Table 1: Number of Patients, Gender & Acute vs Chronic Distribution

Male Disease	Acute cases	Chronic cases	Total Cases
	29 (28.4%)	73 (71.5%)	102 (56.0%)
Female Disease	18 (21.9%)	64 (78.0%)	82 (45.0%)

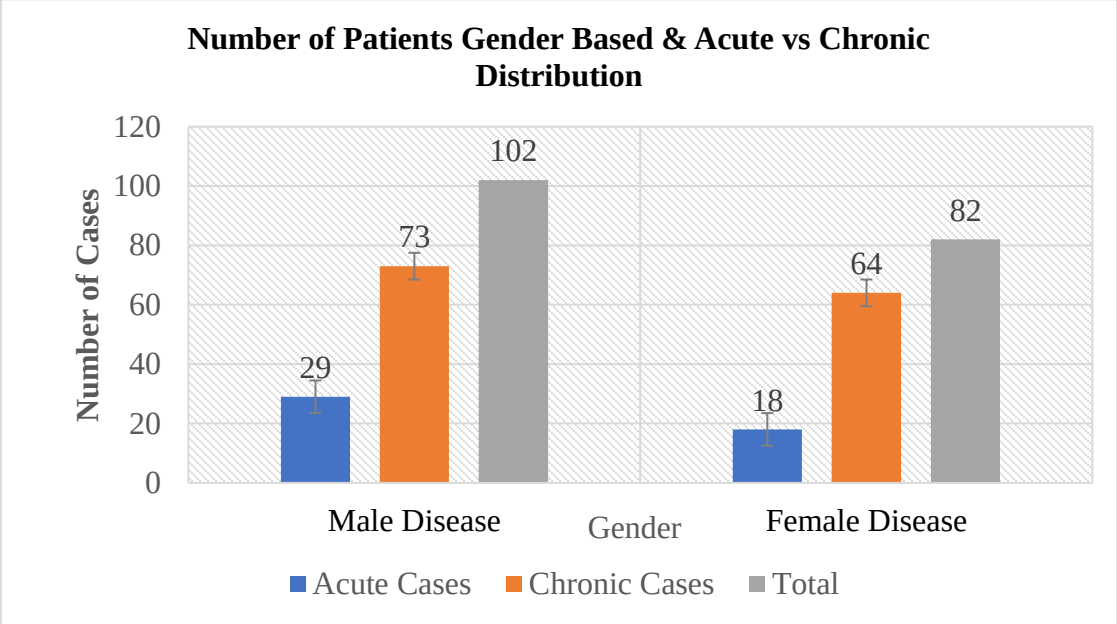

Figure 1: Acute and chronic disease distribution by gender. Chronic conditions were more prevalent in both males (71.6%) and females (78.0%) compared to acute cases (28.4% and 22.0%, respectively).

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Table 2: Acute & Chronic Conditions in Males

S. No	Disease	Acute	Chronic	Total Cases	Percentage (%)
1	GIT Disorders	7	5	12	10.43%
2	Infertility	5	3	8	6.96%
3	Hepatitis	4	3	7	6.09%
4	Kidney Disease	4	10	14	12.17%
5	CVD	3	11	14	12.17%
6	Hernia	3	1	4	3.48%
7	Neuro Disorder	1	3	4	3.48%
8	Viral Infection	3	0	3	2.61%
9	Anemia	0	4	4	3.48%
10	Hypertension	0	2	2	1.74%
11	Pulmonary Disease	2	5	7	6.09%
12	Diabetes Mellitus	0	15	15	13.04%
13	Cardiovascular Disease	3	11	14	12.17%
15	Thyropathy	0	1	1	0.87%
16	Osteopathy	0	6	6	5.22%
Mean+ SD		2.33±2.16	5.33±4.43	7.67±4.89	0.07±0.04

P-value = 0.43 (Chi-square test)

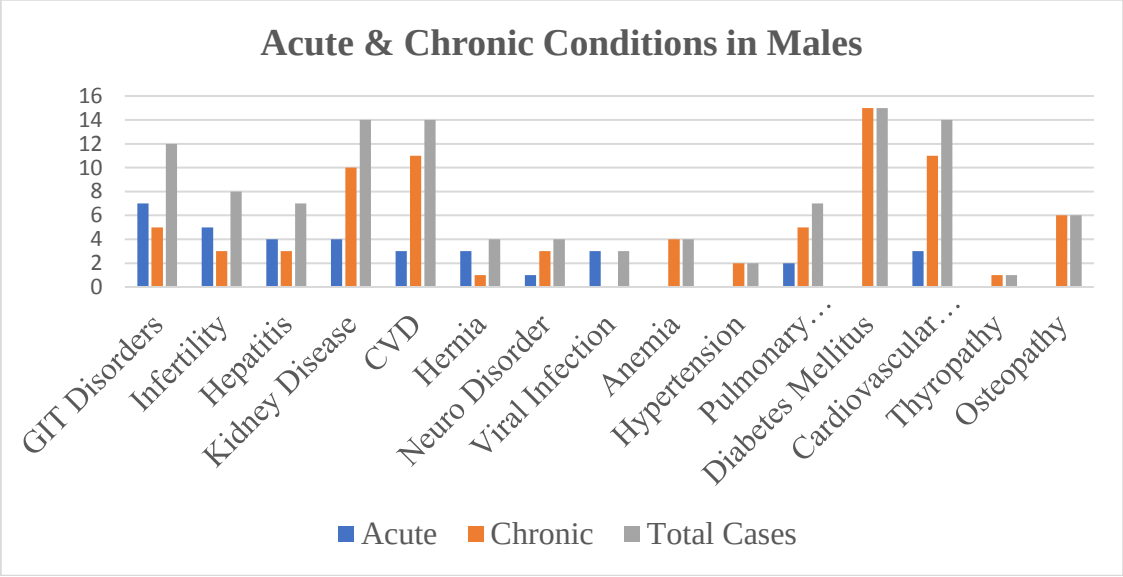

Figure 2: Prevalence of acute, chronic, and total cases of documented health conditions in the male cohort.

Table. 3: Distribution of Acute and Chronic Diseases Among Female Patients

S. No	Disease	Acute	Chronic	Total Cases	Percentage (%)
1	Diabetes Mellitus	8	21	29	20.86%
2	Hernia	2	20	22	15.83%
3	Heart Disease	2	10	12	8.63%
4	Asthma	2	0	2	1.44%
5	Anemia	1	0	1	0.72%
6	Chronic Kidney Disease	1	6	7	5.04%

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7	Tuberculosis	1	0	1	0.72%
8	Arthritis	0	8	8	5.76%
9	Nerve Disorders	0	5	5	3.60%
10	Hypertension	0	4	4	2.88%
11	Digestive Ulcer	0	3	3	2.16%
Mean+ SD		1.55±2.30	7.00±7.43	8.55±9.14	0.06±0.07

P-value = 0.073 (Chi-square test)

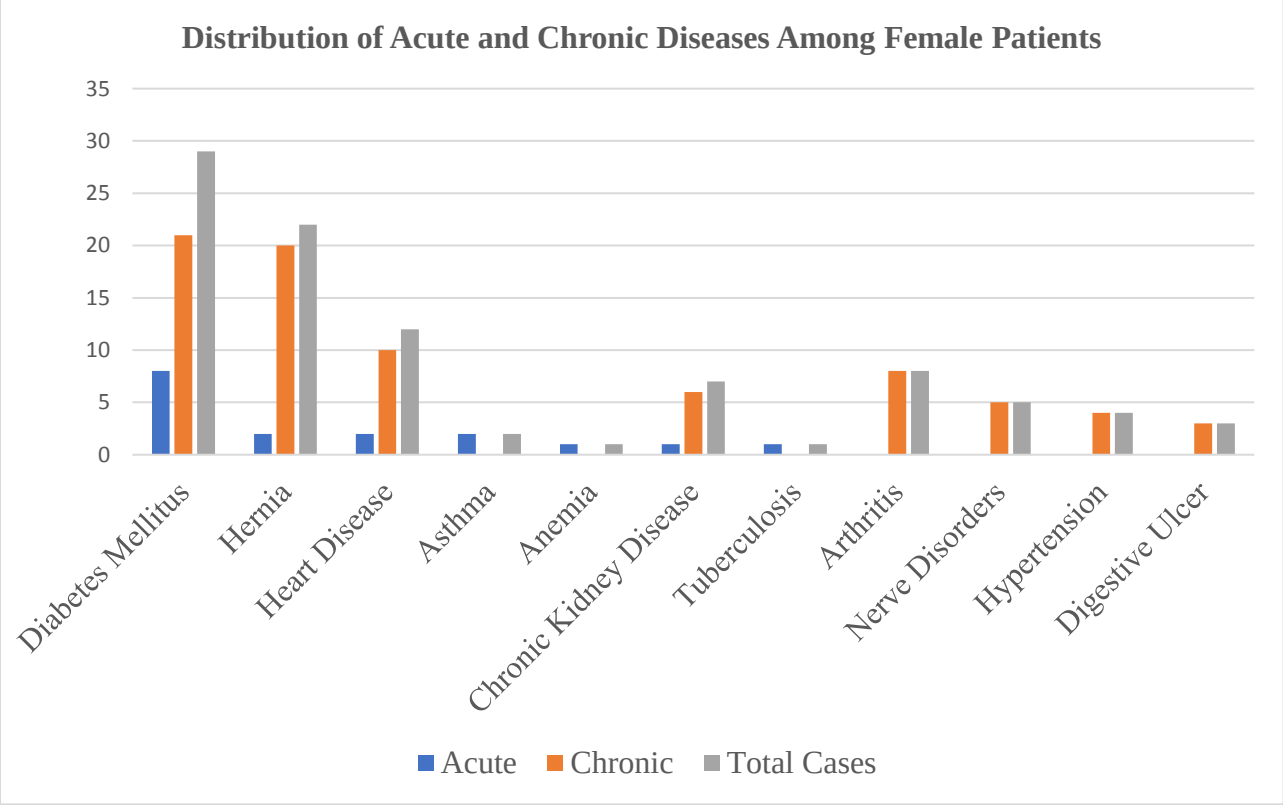

Figure 3: Comparative burden of acute and chronic diseases in female patients. Gray bars illustrate total cases, highlighting high-prevalence conditions such as Diabetes Mellitus and Hernia within the study sample

Table 4: Epidemiological Distribution of Acute and Chronic Cases by Gender and Age Group

Gender	Condition	0–12 Years	13–30 Years	31–60 Years	>60 Years	Total
Male	Acute	3	9	9	5	26
Male	Chronic	0	12	38	23	73
Female	Acute	2	6	5	4	17
Female	Chronic	1	10	37	19	67
Total		6	37	89	51	183
Mean ± SD		1.50 ± 1.29	9.25 ± 2.50	22.25 ± 17.69	12.75 ± 9.67	45.75 ± 28.35

P-value = 0.277 (Chi-square test)

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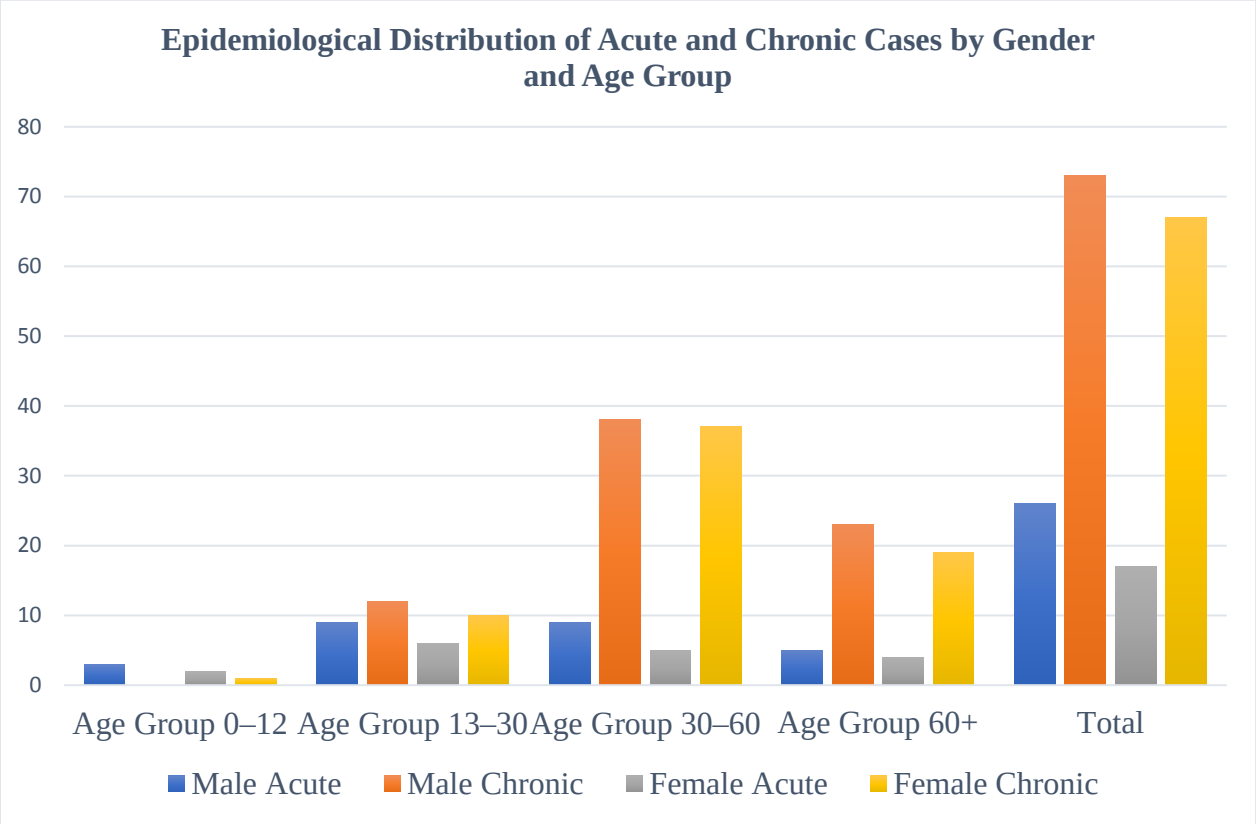

Figure 4: Breakdown of acute and chronic clinical cases across distinct age demographics among male and female cohorts.

Discussion

The findings on medication adherence and its associated factors among patients with acute and chronic diseases in the DHQ teaching hospital, Kohat. According to the previous results, individuals with chronic illnesses had a high rate of medication non-adherence, which is in line with previous research. The main obstacles to adherence were found to be side effects, forgetfulness, and prescription costs (Simpson et al., 2006; Vrijens et al., 2012). These findings highlight the necessity of focused measures to increase drug compliance, such as patient education initiatives and cost-cutting techniques (Steiner et al., 2000).

The date of chronic disorders accounts for 71.5% male cases and 78.0% of female cases, indicating a substantial prevalence of chronic conditions over acute cases in both genders **(Table 1).** This demonstrates the increasing prevalence of chronic diseases in the study population, which has significant implications for the distribution of healthcare resources and patient management, especially regarding medication adherence, because chronic conditions often call for long-term care.

Males represented a slightly higher proportion of total cases (56% vs. 45%), and females had a higher relative share of chronic diseases. Diabetes mellitus (13.04% of male cases), chronic renal diseases (12.17%), and cardiovascular disease (12.17%) were the most common chronic conditions in men (Table 2). Notably, Table 2 shows a "CVD" as duplicate entries, suggesting a data recording error that has to be fixed. Diabetes mellitus accounted for 20.86% of all chronic conditions in females, with hernias coming in second at 15.83%, and heart disease at 8.83% **(Table 3).** Given that hernias are generally more frequent in men, the high frequency of hernias

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among females is notable. This might be due to the particular population under study or a different categorization (such as umbilical or incisional hernias).

For both genders (38 men and 37 females), chronic diseases are highest among those aged 30-60 years old, followed by those aged 60+ **(Table 4).** Although acute cases are more evenly distributed across age groups but are most frequent in the 13-30 and 30-60 age groups. No chronic cases were reported in males aged 0-12, while only 1 chronic case was recorded in females of the same group. This suggests that adults and older individuals bear the brunt of the chronic disease burden.

Conclusion

Medication adherence remains a major challenge among patients with acute and chronic diseases, negatively affecting treatment outcomes and increasing healthcare costs. This study provides valuable evidence on the level of medication adherence and its associated factors among patients at DHQ Teaching Hospital, Kohat. The findings can guide healthcare professionals and policymakers in designing targeted interventions to improve medication adherence, optimize treatment outcomes, and reduce the burden on the healthcare system.

Source of Funding

No funding was received from any organization, institution, or agency for the conduct of this study.

Conflicts of Interest

The authors declare no conflicts of interest related to this study.

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