JEPIBIO
Journal of Epidemiology and Infection Biology

Research Article

Impact of Chronic Illnesses on Pain Perception, Coping Strategies, and Daily Life Performance in Women with Dysmenorrhea: A Prospective Observational Study in Pakistan

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Date of Receiving: 05/10/2024
Date of Acceptance 13/11/2024
Date of Publishing 10/12/2024

ABSTRACT Dysmenorrhea is a common gynaecological disorder that affects women of reproductive age. It is primarily characterized by painful menstrual cramps. This condition worsens if chronic illnesses such as diabetes, hypertension etc. is present. Chronic illnesses increase levels of inflammation and decreases the individual's pain threshold. The aim of this study was to assess the correlation between chronic illnesses, dysmenorrhea severity, coping mechanisms and daily life performance in Pakistani women. A total of 351 females (aged 18–50 years) diagnosed with dysmenorrhea were included in a prospective observational study. The status of chronic illnesses was used to compare pain levels, coping mechanisms and daily life performances. Structured questionnaires were used to collect the data. The results revealed that women with chronic illnesses mentioned having more severe pain (79%) than women without chronic conditions (69%). In all, pain onset was earlier in participants with chronic illnesses and later in those without, but those without chronic illnesses did more often report pain from the first period ($p < 0.05$). Coping mechanisms such as exercise and medication were less effective when offered to the chronic illnesses group. Participants with chronic illnesses were limited to daily activities such as 'climbing stairs, walking and carrying groceries, much more so than those without.' Chronic illnesses also had a greater effect work performance; 88% of people with chronic illnesses were limited in their work or activities, versus 76% without. The chronic illnesses group had more emotional problems, such as anxiety and stress, and they all affected life performance. The results of this study highlight the impact of chronic illnesses and dysmenorrhea on women's health. Improved quality of life and overall functionality in people with both conditions requires integrated medical, psychological and lifestyle interventions.

KEYWORDS Dysmenorrhea, Chronic Illnesses, Pain Management, Life Quality, Women Health

Introduction

Dysmenorrhea is a painful condition experienced by most adolescent and adult women. It is characterized by spasmodic pain during menstruation, among women in their reproductive years (Abd El-Mawgod *et al*, 2016). This condition can be categorized as Primary Dysmenorrhea (PD) and secondary Dysmenorrhea (SD) depending on its origin (Ahangari, 2014). Both categories of dysmenorrhea impact the quality of life and pain levels (Itani *et al*, 2022). Among Pakistani population, dysmenorrhea is very common among youngsters, specifically medical students with the prevalence rate between 79.5%-83.6% (Abbas *et al*, 2020; Adib-Rad *et al*, 2022). While the common symptoms observed other than pain were abdominal pain, dysuria, headache, fatigue and vomiting (Maqbool *et al*, 2021). Several studies have pointed to the fact that dysmenorrhea affects daily functioning,

To cite this article: Akram, W., I. Khalid, M. Khalid, K. Javaid, S. U. F. Bukhari, S. T. U. Shah, A. Naseer, U. Ali, and A. Nasir. (2024). *Impact of Chronic Illnesses on Pain Perception, Coping Strategies, and Daily Life Performance in Women with Dysmenorrhea: A Prospective Observational Study in Pakistan*. Journal of Epidemiology and Infection Biology 1(2):14-21.

reduces productivity at the workplace and place an overall poor quality of life. Though the primary aetiologic factors of dysmenorrhea revolves around uterine contractions and prostaglandin activity, other associated disorders and general conditions can predispose or aggravate dysmenorrhoea.

Chronic illnesses such as diabetes and hypertension are prevalent among the Pakistani women population (Toor *et al*, 2023; Lai *et al*, 2024). It is estimated that women affected with both dysmenorrhea and chronic illnesses could face worse suffering as compare to women with dysmenorrhea only. Chronic illnesses conditions usually increase inflammation and decrease pain threshold leading to excruciating menstrual cramps (Schroeder *et al*, 2000). It could also impact on daily activities and work performance since dysmenorrhea and chronic illnesses are closely related. Besides, such chronic illnesses often reduce the efficacy of traditional coping strategies like exercising and taking analgesics (Downs *et al*, 2010). These conditions have been known to make students or workers produce low or miss school or work days and disturb normal functioning (Hu *et al*, 2020). Knowledge of such effects is important for designing intervention programs that will help this group of patients.

As dysmenorrhea affects a significant number of women, there is a dire need to study associated conditions. Being a common disorder, there is less research attention directed towards the psychological and social aspects of dysmenorrhea (Tsonis *et al*, 2021). It also seeks to determine the impact of chronic illnesses in severity of dysmenorrhea, level of pain experienced, methods of coping and level of performance as measured by work production and outcomes. This approach will allow us to examine those outcomes that may help distinguish the experiences of women with chronic conditions. So, a perspective observational Study has been designed to find the impact of chronic illnesses on pain perception, coping Strategies, and daily life performance in Pakistani women with the problem of dysmenorrhea.

Materials and Methods

Ethical Considerations

The necessary ethical consideration approvals were obtained from the Institutional Research Board (IRB) and the Institutional Ethical Committee of the University of Central Punjab, Lahore, ensuring adherence to ethical standards and research protocols. Additionally, permissions were secured from Surgi-med Hospital, Services Hospital and Mayo Hospital, Lahore, Pakistan to collect data from their patients. All the potential participants were thoroughly explained the study's objectives, procedures, and potential implications, and obtained their informed consent through signed consent forms. To maintain confidentiality and protect participants' privacy, any personally identifiable information, such as names were not collected.

Study Design

This study was conducted using prospective observational study design with the study period of 1 year. The study included women aged 18–50 years with regular menstrual cycles for the past six months, diagnosed by a medical practitioner with dysmenorrhea, experiencing pelvic pain, and in sound health. Exclusion criteria eliminate individuals with irregular cycles, other chronic pain or serious health conditions, recent pelvic surgeries, pregnancy, severe mental health issues, or substance abuse. All the participants visiting the gynaecology departments of Surgi-Med Hospital, Services Hospital, and Mayo Hospital in Lahore, Pakistan.

Data Collection

All patients with Dysmenorrhea who met the inclusion criteria were invited to enroll. Those who agreed to participate provided their informed consent by signing a consent form. Subsequently, these participants completed a structured questionnaire covering demographics, severity, coping mechanisms, and quality of life, with assistance from trained researchers to ensure privacy and confidentiality. A total of 37 variables were asked in the questionnaire apart from name and address.

Statistical Analysis

The study used SPSS version 25.0 for data analysis to explore factors associated with Dysmenorrhea among women. Descriptive statistics summarized participant demographics, while chi-square tests and non-parametric tests such as Wilcoxon rank sum test examined associations between coping mechanisms and pain management strategies, including pharmacological treatments, physical therapies, and alternative practices.

Results

This study describes the demographic profile of 311 female participants, and the backgrounds are diverse (Table 1). More than half of participants (54.3%) were in their 20s or 30s, in ages 29–39 and then 25.5% in their 20s, age 18–28, and last 20.2% in their 40s or 50s, thus indicating that they are women in their reproductive years. The rest represented a variety of occupations including housewives (8.1%), students (3.9%), nurses (6.2%), doctors (1.9%), teachers (2.6%), and others (21.4%) who did not specify jobs (59.9%). About two thirds resided in urban areas (61.1%), and 38.9% in rural areas. Education levels differed as 48.5 percent of had primary education, 28.3 percent had higher education, and 23 percent had secondary education. Moreover, 76.8% of them were married, which might increase coping mechanisms and support systems. All the participants that were found having chronic illnesses reported a large range of diseases (Fig. 1). Majority of the patients were found having hypertension followed by diabetes and asthma. While the least reported chronic illnesses were cysts, allergic rhinitis, ulcers etc.

Evaluation of pain levels and menstruation related factors

It was found that there were significant different patterns of pain onset at menstruation within chronic illnesses groups (Table 2). Women with chronic illnesses were five times more likely to report that painful menstruation began "for the last few months" (42%) than without (32%). For participants who had chronic illnesses, pain since the first period was reported by 36% versus 54% who did not. Duration of menstruation days did not differ significantly between groups ($p = 0.7$; median). Participants with chronic

illnesses reported slightly higher rates of severe pain (79%) than did participants without chronic illnesses (69%). In the non-chronic illnesses group nearly half (49%) of participants reported feeling mild pain; compared to respondents in the chronic illnesses group (19%) who did the same. Less common were participant reports of the worst pain who had chronic illnesses (3.2%) compared to those without (8.2%) (Fig. 2a). Pain levels in the groups were very close to, but not significant between ($p = 0.072$). Five different complaints due to menstruation were reported by the participants (Fig. 2b). Majority of patients reported fatigue and mood disorders followed by bloated feeling and loss of appetite.

Table 1. Summary of the demographic information of participants, including gender, age group, occupation, area of residence, education level, and marital status

Demographic characteristics	**Levels**	**Frequency (Percentage) N = 311**
Marital Status	Married	235 (76%)
	Single	76 (24%)
Area of Residence	Rural	121 (39%)
	Urban	189 (61%)
Education level	Higher Education	91 (29%)
	Primary Education	152 (49%)
	Secondary Education	67 (22%)
History of chronic illnesses	No	148 (48%)
	Yes	162 (52%)
Regular menstruations	No	179 (59%)
	Yes	123 (41%)
Source of knowledge about menstruation	Friend/sibling	59 (19%)
	Mother	141 (46%)
	Other	6 (1.9%)
	Physician/nurse	103 (33%)

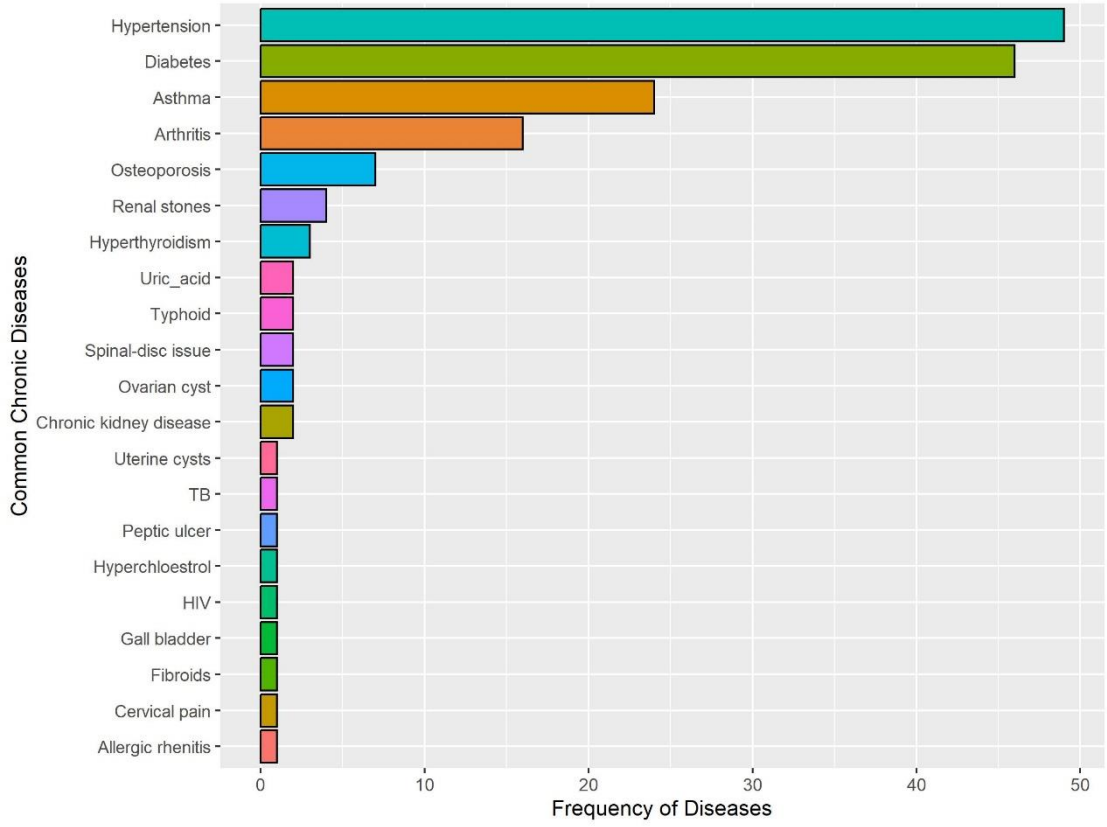

Fig. 1: Common chronic illnesses reported by the participants. Conditions were combined as per needed such as thyroid related conditions were combined in hyperthyroidism.

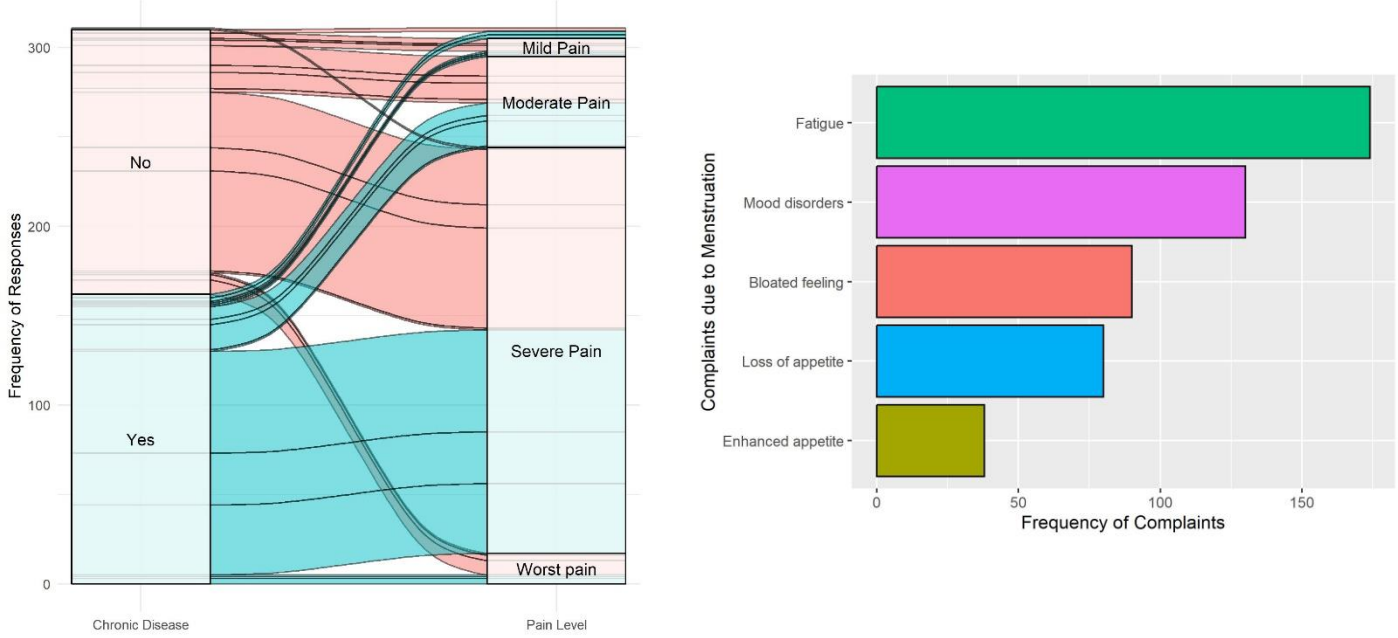

Fig. 2: Pain levels and common reported complaints due to menstruation reported by participants. (a) Correlation of Chronic illnesses and Pain levels showing the relation of types of pains and chronic illnesses. **(b**) Common reported complaints due to menstruation among the participants.

Table 2: Distribution of participants based on the regularity of menstruation, experience of pain during menstruation, regular medication for chronic illnesses, and history of operations.

Factors	Characteristics	Levels	Chronic illnesses Absent (n = 148)	Chronic illnesses Present (n = 162)	p-value
Menstruation related factors	Since having painful menstruation	For the last few months	46 (32%)	66 (42%)	0.007
		For the last few years	21 (14%)	36 (23%)	
		Since my First period	78 (54%)	57 (36%)	
	Duration of your menstruation days		6 (5, 7)	5 (5, 7)	0.7
	Pain level	Mild Pain	7 (4.8%)	3 (1.9%)	0.072
		Moderate Pain	26 (18%)	25 (16%)	
		Severe Pain	101 (69%)	125 (79%)	
		Worst pain	12 (8.2%)	5 (3.2%)	
Coping Mechanisms	Use of Analgesics	No	78 (53%)	100 (62%)	0.085
		Yes	70 (47%)	60 (38%)	
	Exercise	No	93 (63%)	128 (80%)	0.002
		Yes	54 (37%)	33 (20%)	

Evaluation of coping mechanisms

All the participants between both groups were more likely avoiding the exercise (Table 2). Around 80% individuals with chronic illnesses were not engaged in exercise compared to 63% of those without chronic illnesses (p = 0.002). Use of analgesics was slightly more common in participants without chronic illnesses (47%) than in those with chronic conditions (38%), but the difference was not statistically significant (p = 0.085). The frequency of specific analgesic use showed a great variation among the responses (Fig. 3). Paracetamol was the most used analgesic among all participants. Ibuprofen and Nimesulide were also widely used but to a lesser extent. Other analgesics like Mefenamic acid and Drotaverine showed moderate usage while rarely used options included Norethisterone and Tranexamic acid. These results suggest a reliance on use of analgesics such as Panadol as a primary pain coping mechanism.

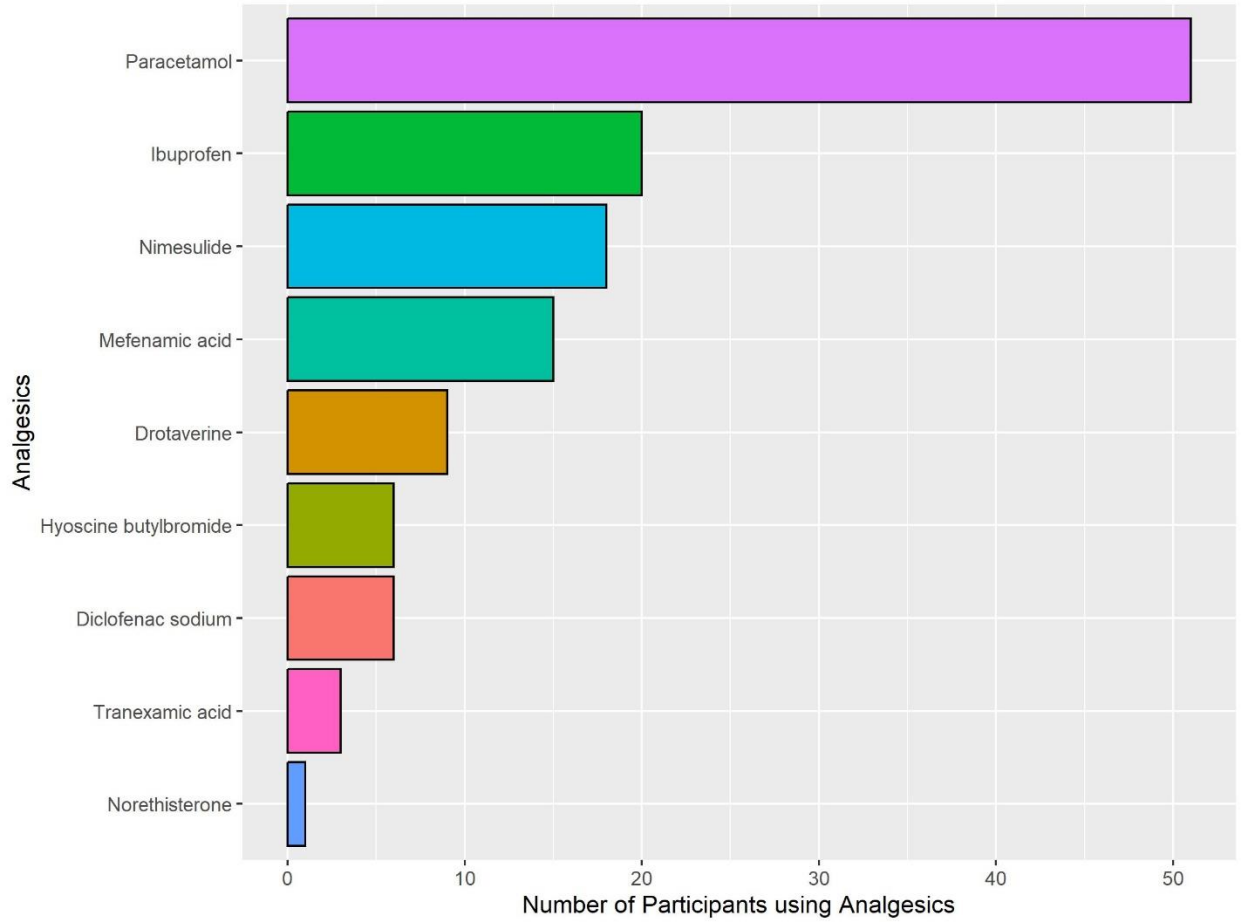

Fig. 3: Variation in frequency of use of analgesics among the participants. These analgesic drugs are represented in this figure. Most participants shared the trade names which were later studied and drug names were identified in those marketed brands.

Table 3: Comparison of status of chronic illnesses, daily life activities and life performance.

Characteristics	Levels	Chronic illnesses Absent = 148	Chronic illnesses Present = 162	p-value
Vigorous activities	No, Not Limited at all	25 (17%)	11 (6.8%)	<0.001
	Yes, Limited a Little	61 (41%)	101 (62%)	
	Yes, Limited a lot	62 (42%)	50 (31%)	
Moderate activities	No, Not Limited at all	22 (15%)	11 (6.9%)	0.026
	Yes, Limited a Little	72 (49%)	97 (61%)	
	Yes, Limited a lot	53 (36%)	52 (32%)	
Lifting or carrying groceries	No, Not Limited at all	24 (16%)	15 (9.3%)	0.003
	Yes, Limited a little	60 (41%)	96 (60%)	
	Yes, Limited a lot	63 (43%)	50 (31%)	
Accomplished less than you would like	No	35 (24%)	19 (12%)	0.012
	Yes	112 (76%)	142 (88%)	
Had difficulty performing the work or other activities	No	36 (24%)	22 (14%)	0.019
	Yes	111 (76%)	140 (86%)	
evaluate your life performance	Average	55 (38%)	92 (57%)	0.001
	Good	8 (5.5%)	9 (5.6%)	
	Poor	63 (43%)	50 (31%)	
	Very poor	20 (14%)	9 (5.6%)	

Evaluation of daily life activities and performances

Participants with reported limiting moderate activities more commonly as compared to not limiting activities and completely limiting the activities (Table 3). Activities such as vigorous activities, such as running, lifting heavy objects. Moderate activities, such as moving household articles, lifting or carrying activities, walking routine (walking more than a mile) were limited to some extent in both groups. But participants with chronic illnesses reported higher frequency of limiting moderate activities among all the types of activities as compared to participants with no chronic illnesses. In the chronic illnesses group, there was a trend toward greater difficulty in performing work (86%) as compared to those (76%) without chronic illnesses reported ($p< 0.012$). More participants with chronic illnesses performed less (87%) than they would expect to perform as compared to participants with no chronic illnesses (78%). Participants with chronic illnesses rated their life performance as low (31%), but a higher percentage (43%) of other participants rated their life performance as poor or very poor. Participants with chronic illnesses reported more frequent, as well as more severe, limitations in their daily activities. For overall, chronic illnesses were associated with a significant reduction in work performance and life satisfaction.

Discussion

This study underscores the effects of dysmenorrhea to women, but especially to those with chronic illnesses, for instance diabetes and hypertension. Being a very common problem in Pakistan, dysmenorrhea is of great public health concern with an impact on physical, emotional and the social life of the women. The findings in this observational study substantiate the major influence of coexisting chronic illnesses on pain levels, daily activities, and life performance. Additionally, it aggravates the difficulties for women during menstruation. These interactions need to be understood to help the development of targeted interventions to boost the quality of life of affected women.

Distinct patterns in how pain started and how severe it was in participants with and without chronic illnesses were also reported. In previous studies, a correlation between chronic illnesses and dysmenorrhea was already reported (Downs *et al*, 2010; Chung *et al*, 2021). Chronic illnesses include diabetes, hypertension, asthma, arthritis, osteoporosis etc. were already reported in this context (Macsali *et al*, 2012; Li *et al*, 2020). Current study revealed that participants with chronic illnesses were more likely to experience severe pain as mentioned in the previous studies (Downs *et al*, 2010). Such results suggest that chronic illnesses decrease the threshold for pain and amplify the experience of discomfort. These results highlight the joint impact of managing menstrual pain and chronic illness.

In this study, it was revealed that daily activities of participants with chronic illnesses were more severely affected. The chronic illnesses group was significantly affected in vigorous activities, moderate tasks, and routine activities. This situation was found to be more aggravated for basic activities like carrying groceries and bending. Previously, correlation of dysmenorrhea and other disorders was reported to affect the daily activities (Fry *et al*, 1997; Li *et al*, 2020; Eshetu *et al*, 2022; Toor *et al*, 2023; Patel and Chesnut, 2024). These limitations confirm the general level of chronic illnesses on physical functionality, while at the same time exposing the necessity of adopting adaptive strategies to counter such challenges.

Participants with chronic illnesses were also significantly impaired in work performance and productivity. Women with chronic illnesses reported more trouble doing work and had emotional problems as compared to women with no chronic illnesses. These results are in agreement with previous studies focusing lifestyle interventions or physical activities (Vincenzo De Sanctis *et al*, 2015; Nanavati *et al*, 2018; Armour *et al*, 2019b; Kulshrestha and Durrani, 2019).In this study, overall life performance was rated as poor or average by most people who have chronic illnesses, which is an indication of an overall reduction of quality of life and work satisfaction. These findings show the effect of chronic illnesses and dysmenorrhea on the professional and personal life.

Participants with chronic illnesses were less effective at coping with the dysmenorrhea. Often reporting that conventional strategies such as exercise and medication had reduced efficacy. The inability to alleviate pain may also be caused by the chronic inflammation and systemic effects that accompany conditions such as diabetes and hypertension. Common over the counter analgesics reported in previous studies were ibuprofen, paracetamol, etc.(Armour *et al*, 2019a; Nie *et al*, 2020). Current study also showed the higher frequency of paracetamol use among the women. This, combined with existing evidence, underlines yet again the need for the development of personalized and integrated management approaches for women with coexistent chronic illnesses.

In conclusion, this study shows the poor quality of life circumstances of women with dysmenorrhea and chronic illnesses. The profound effects these conditions have on pain levels, daily functioning and on life performance demand a commensurate holistic approach to them. Future work should explore these mechanisms to understand the factors underlying these interactions. Therefore, it is dire need to develop interventions targeted for women with chronic illnesses. Lifestyle modification and multi-disciplinary approaches can help them improve their ability to increase overall quality of life.

Declaration of Competing Interest

The authors declare that they have no competing or conflict of interests.

Author Contributions

WA: Conceptualization, Methodology, formal analysis, Writing—review and editing. **IK:** Conceptualization, Methodology, formal analysis. **MK:** Methodology, Formal analysis. **KJ:** Methodology, Formal analysis **SUFB:** Methodology, Formal analysis**, STUS:** Methodology, Formal analysis**, AN:** Formal analysis. **UA:** Formal analysis, Writing—original draft preparation. **AN:** Formal

analysis, Writing—original draft preparation. All authors have read and agreed to the published version of the manuscript.

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