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HEALTH-RELATED KNOWLEDGE ATTITUDE PRACTICE AND QUALITY OF LIFE AMONG DIABETIC HYPERTENSIVE PATIENTS IN EASTERN NEPAL

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ABSTRACT

The study aimed to investigate health-related knowledge, attitude, practice (HR-KAP), and quality of life (HRQoL) among diabetes and hypertensive patients at Damak municipal hospital, Province 1, Nepal. A cross-sectional study was conducted in the medicine outpatient department of Damak Municipal Hospital from April- September 2022. The participants' HR-KAP was assessed using a 23-item self-administered questionnaire, and their HRQOL was determined using the EuroQoL-5 dimensions (EQ-5D-5L) questionnaire. Independent sample test and chi-square test were used to measure the association between patients characteristics and outcome variables. P value <0.05 was considered statistically significant. A total of 105 patients with a mean age of 49.40 (±11.11 SD) years participated in the study. Although 49.5% of the patients demonstrated good disease knowledge, their attitudes and practices toward the diseases were found to be poor, accounting for 30% and 19%, respectively. The KAP score was significantly associated with the patients age group, gender, and patient education status (p<0.05). The majority of patients reported mild or moderate problems in morbidity, usual activities, pain/discomfort, and anxiety/depression with the average EQ-5D-5L index value and EQ-VAS scores of 0.78 (±0.09 SD) and 58.43 (±10.882 SD) respectively. The HRQoL was comparatively lower among age groups over 65 years, female gender, and illiterate patients (p<0.05). The study concludes that patients' HR-KAP toward their disease was inadequate and had diminished HRQoL. There is an urgent need for health educational and interventional programs particularly focusing on chronic diseases such as diabetes and hypertension to people in this area.

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Introduction

Diabetes and hypertension both are non-communicable diseases of major health concern worldwide [1]. They are the leading causes of coronary heart disease, stroke, end-stage renal failure, disability, and higher healthcare expenses [2]. According to researchers, high blood pressure (BP) presently kills 9 million individuals per year, and by 2025, up to 1.56 billion adults globally will be hypertensive. Raised blood pressure is thought to be responsible for 7.5 million deaths and 57 million disability-adjusted life years (DALYs). On the other hand, the global prevalence of diabetes was 8.3 percent in 2013 (i.e., 382 million individuals) and is expected to rise to 592 million by 2035 [3]. The World Health Organization (WHO) member nations adopted the Global Action Plan for the Prevention and Control of Non- communicable Diseases in 2011, to halt the rise of diabetes by 2025 and reduce hypertension prevalence by 25% between 2010 and 2025 [4]. Patients' health-related knowledge, attitude, and practice (HR-KAP) play an important role among people living with a chronic disease like diabetes for an effective health promotion and disease control program [5]. Diabetes and hypertension can have a negative impact on a patient's health and quality of life [6]. As the population ages, chronic diseases including hypertension and type 2 diabetes mellitus are

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becoming more prevalent. Maintaining control of these diseases can significantly lower the risk of complications and enhance the quality of patients' lives [7]. Therefore, the study aimed to investigate health-related knowledge, attitude, practice (HR-KAP), and quality of life (HRQoL) among diabetes and hypertensive patients at Damak municipal hospital, Province 1, Nepal.

Materials and Methods

A cross-sectional observational study was conducted on patients visiting in medicine outpatient department at the Damak Municipal hospital, from April 2022 to September 2022. Damak Hospital is a 100 bedded tertiary health institution and referral center from primary health centers, which provides medical services to the residents in the municipals as well as the neighboring city and villages of eastern provincial areas of Nepal. Ethical approval was obtained from the Institutional Review Committee of Purbanchal University of School of Health Science (IRC-PUSHS). Institutional permission was taken from Damak Munipal Hospital before the conduct of the study. Inclusion criteria include patients with co-morbid diabetes and hypertension, the age group above 30 years, having at least one year of a medical history of diabetes and hypertension, and on medication therapy. Likewise, Patients with other chronic co-morbidities, those requiring hospital admission, mental impairment, hearing disability, and pregnant and lactating mothers were excluded from the study. A consecutive sampling technique was used to select study participants. Using the prevalence rate of comorbid diabetes and hypertension of 6.8% from a study conducted by Gyawali *et al*. in a semi-urban area of Pokhara, Nepal [8], with a margin of error of 0.05 and 95% confidence interval, the required sample size calculated was 98. However, an additional 7% of participants were enrolled in the study representing a total sample size of 105 for this study.

Questionnaires were developed after reviewing articles relevant to the study [9-12]. The team of supervisors and researchers carried out the content validation. The questionnaire was first developed in English, then translated into the Nepali language by two independent healthcare professionals fluent in English and Nepali, and then back-translated through the crossover. Any ambiguities were discussed and then resolved upon consensus between researchers and translators. The questionnaires were then face-validated by 10 patients for assessing the clarity of content and modified accordingly to develop the final questionnaire. The total of 23 items questionnaires were divided in three domains i.e 10 knowledge questionnaire, 6 attitude and 7 practice related respectively questionnaires. The knowledge assessment questionnaires was presented as yes, no, I don't know answers whereas attitude and practice score were presented in 3 level likert scale as "never, sometimes and always". In order to assess health related quality of life, the EQ5D5L questionnaire self complete version on paper obtained on request from EuroQuol, was used. The EQ5D5L comprises two parts: the EQ5D5L description system and the EQ Visual Analogue scale (EQ VAS). The descriptive system has five dimensions: mobility, selfcare, usual activities, pain/discomfort, and anxiety/depression. Each dimension has five levels: no problems, minor problems, moderate problems, severe problems, and extreme problems.

On each outpatient day, the researcher requested the consulting physician to refer patients with a medical history of diabetes-hypertension attending the internal medicine of outpatients for their health consultation. Every referred patient was informed about the procedure and purpose of the study and requested participation. Following this, informed consent was taken from interested patients meeting eligibility criteria and patients were provided with the research questionnaire for self-administration. For illiterate patients, the investigator facilitates the questionnaire administration process in presence of a witness.

The collected data were entered in Statistical Package for Social Sciences version 11.5 for descriptive and inferential analysis. Knowledge, attitude, and practice (KAP) were classified according to each respondent's score. Participants' corresponding score greater than the mean score of questionnaire value for knowledge, attitude, and practice respectively were considered to have good knowledge, positive attitude, and good practice. To analyze the EQ index, five-level of health state was scored as 1,2,3,4, and 5 of each five dimensions. All health states defined by EQ-5D-5L were converted into a single summary index called utility. The index value ranges from −1 to 1 (0 indicates death, <0 indicates worse than death and 1 indicates full health). We used EQ index Value set calculation based on the EQ index value set determined by jyani *et al*. [13] referencing India due to the lack of a standard value set of Nepal and considering the close geographical and religious resemblance with India. EQ VAS scores were presented in the mean. Independent sample tests and chi-square tests were used to measure the association between dependent and independent variables. P value<0.05 was considered statistically significant.

Results and Discussion

A total of 105 patients with a mean age of 49.40 (± 11.11 SD) years participated in the study, of which the majority of patients, 66 (62.85%) were aged ≤65 years, and around 50.5% of participants were female. More than half of the patients had pursued some form of formal education (58.9%) and were engaged in some financial employment sources (50.5%). About 41.9% of the participants had a positive family history of hypertension or diabetes **(Table 1)**.

Table 1. Sociodemographic characteristics of participants

Socio-demographic characteristics	Category	No. of patients	Percentage (%)
Age	≤65	66	62.85

	>65	39	37.14
Gender	Male	52	49.5
	Female	53	50.5
Education	Illiterates	44	41.9
	Primary	23	21.9
	Secondary	27	25.7
	Above	11	10.5
Occupation	Unemployed	52	49.5
	Employed (Government/private/business)	53	50.5
Family History	Present	44	41.9
	Absent	48	45.7
	Not known	13	12.4

A majority of respondents were aware of common signs and symptoms of diabetes (85.7%) and hypertension (79%), and the importance of medication adherence (76.2%). Around, 95.2% of patients agree that obesity is a major risk factor for developing diabetes and hypertension whereas most respondents didn't know the possible complications of the disease (58.1%), medication-induced risk of hypoglycemia or hypotension (78.1%) and reasons for diabetes (68.6%) or condition for hypertension (58.1%) **(Table 2)**.

Table 2. Response to knowledge questions

Questionnaires	**Correct answers n (%)**
1. What leads to a condition called hypertension?	44 (41.9)
2. Condition that is said to be diabetes?	56 (53.3)
3. symptoms of hypertension	83 (79)
4. Major reason of diabetes	33 (31.4)
5. Symptom of inadequate blood sugar control in the body	90 (85.7)
6. Major complication or risk related to the disease	44 (41.9)
7. Does antidiabetic or antihypertensive drugs sometimes cause hypoglycemia or hypotension	23 (21.9)
8. Importance of adherence to medication	80 (76.2)
9. Quality of life declines as disease progresses	45 (42.9)
10. Overweight is a risk factor for developing disease	100 (95.2)

In terms of attitude, the majority of participants think that increasing fruit and vegetable consumption (74.3%) and the need for regular physical activity (78.1%) could prevent diabetes and hypertension. Around half of the participants agree that limiting salt intake is beneficial to control disease (51.4%). However, most of the patients agree that taking ayurvedic medication in addition to regular allopathic medicine is beneficial (72.4%) and thinks that regular adherence to medication is not necessary during the asymptomatic condition (65.7%) Furthermore, about 64.8% of participants believed that consuming too much alcohol does not negatively impact their blood pressure **(Table 3)**.

Table 3. Response to Attitude Questions (N=105)

Questionnaires	**Positive response n(%)**
1.Green leafy vegetables and fruits in a regular diet are beneficial	78 (74.3)
2.Limiting extra salt and sugar intake in diet is good	54 (51.4)
3. Consuming ayurvedic or other alternative medicine with your regular medicines is undesirable	29 (27.6)
4. Drinking too much alcohol can cause or aggravate high blood pressure	37 (35.2)
5. Regular exercise or physical activity is necessary	82 (78.1)
6. Medicine on a regular basis is unnecessary if feeling well	36 (34.3)

In terms of practice, most of the patients were not undergoing routine blood sugar and blood pressure measurement (95.3%) and eye and vital organ function monitoring (99%) regularly. Furthermore, the majority of the participant reported that they

had never followed a controlled diet (74.3%) and physical exercise recommended by the health care provider (81%). However, more than three quartiles (77.1%) take their prescribed medication for hypertension or diabetes on regular basis **(Table 4)**.

Table 4. Response to practice questions

Questionnaire	Response	No. of patients n(%)
1. Take prescribed medications	Always	81 (77.1)
	Sometimes	24 (22.9%)
	Never	-
2. Visit a doctor for a routine follow up	Always	12 (11.4%)
	Sometimes	78 (74.3%)
	Never	15 (14.3%)
3. Follow controlled and planned diet	Always	3 (2.9%)
	Sometimes	24 (22.9%)
	Never	78 (74.3%)
4. Forget to take anti-diabetic or antihypertensive medicines	Always	1 (1%)
	Sometimes	79 (75.2%)
	Never	25 (23.8%)
5. Follow Physical exercise recommended by health care provider	Always	6 (5.7%)
	Sometimes	14 (13.3%)
	Never	85 (81%)
6. Check blood pressure or blood sugar on a regular basis	Always	5 (4.8%)
	Sometimes	93 (88.6%)
	Never	7 (6.7%)
7. Routine eye and vital organ function examination	Always	1 (1%)
	Sometimes	56 (53.3%)
	Never	48 (45.7%)

The study found that 52 (49.5%) of patients had adequate awareness of diabetes and hypertension. 32(30.5%) of the participants had a positive attitude, while 73(69.5%) of the total studied population had a negative attitude. According to the findings, only 18(19.1%) of the participant shows good practice scores for the effective management of their disease, whereas 87(80.9%) had a poor practice scores.

A statistically significant relationship between knowledge and attitude (p=0.032 and 0.010) with age group was seen indicating age group ≤ 65 years was more aware of the disease than that age group greater than 65 years. However, the practice score showed an association only between gender (p<0.001) and education (p<0.004). It also showed males (71.15%) were more aware of the disease than the female gender (28.3%). Patients who were more educated had better knowledge regarding disease etiology, potential complications, and disease consequences. Moreover, they had better compliance with medication & doctor's follow-ups. Education status also appeared to be associated with a positive attitude (p=0.002) regarding disease management and compliance with the planned diet. It also confirms that illiterate and primarily educated patients had more negative practice than that patients having secondary, higher secondary, or above education as shown in **Table 5**. The relationship between KAP and occupation was shown to be statistically non-significant with knowledge (0.143) and practice (p=0.965) whereas it has a significant relationship with attitude (p=0.004). There was a significantly good attitude among employed patients than among those who were not unemployed. KAP and family history did not show any statistically significantly associated with the KAP scores of the participants (p=0.382, 0.494, 0.848) **(Table 5)**.

Table 5. Association between Socio-demographic with Knowledge Attitude and practice

Characters	Category	Knowledge				Attitude				Practice			
		N	Poor n(%)	Good n(%)	P value	N	negative	Positive	P value	N	Bad	Good	P value
Age	<65	66	28 (42.42)	38 (57.58)	0.032*	66	40 (60.61)	26 (39.39)	0.010*	66	57 (86.36)	9 (13.64)	0.215
	>65	39	25 (64.10)	14 (35.9)		39	33 (84.62)	6 (15.38)		39	30 (76.92)	9 (23.08)	

Gender	Male	52	15 (28.85)	37 (71.15)	<0.001*	52	28 (53.85)	24 (46.15)	0.001*	52	36 (69.23)	16 (30.77)	<0.001*
	Female	53	38 (71.70)	15 (28.30)		53	45 (84.91)	8 (15.09)		53	51 (96.23)	2 (3.77)	
Education	Illiterate	44	36 (81.82)	8 (18.18)	<0.001*	44	38 (86.36)	6 (13.64)	0.002*	44	40 (90.91)	4 (9.09)	0.030*
	Primary	23	12 (52.17)	11 (47.83)		23	17 (73.91)	6 (26.09)		23	21 (91.30)	2 (8.70)	
	Secondary	27	5 (18.52)	22 (81.48)		27	13 (48.15)	14 (51.85)		27	18 (66.67)	9 (33.33)	
	Above	11	-	11 (100)		11	5 (45.45)	6 (54.55)		11	8 (72.73)	3 (27.27)	
Occupation	Unemployed	52	30 (57.69)	22 (42.31)	0.143	52	43 (82.69)	9 (17.31)	0.004*	52	43 (82.69)	9 (13.31)	0.965
	Employed	53	23 (43.40)	30 (56.60)		53	30 (56.60)	23 (43.40)		53	44 (83.01)	9 (16.98)	
Family History	Present	54	30 (55.56)	24 (44.44)	0.382	44	29 (65.91)	15 (34.10)	0.494	44	36 (81.82)	8 (18.18)	0.810
	Absent/Not known	61	33 (54.10)	28 (45.90)		61	44 (72.13)	17 (27.87)		61	51 (83.61)	10 (16.67)	

**Indicates having association i.e P value<0.05. P value is calculated by using the chi-square test.*

Figure 1 represents the percentage of patients (N = 105) who reported EQ 5D levels 1 to 5 (no problem, mild problem, moderate problem, severe problem, very severe/ unable) by dimension. For mobility and usual activities, more than two-thirds of the patient-reported level 2 showing they had mild problems with mobility or doing usual activities, whereas, for pain and discomfort, the majority of patients reported level 3 indicating moderate pain/discomfort (52.40%), or anxiety/depression (45.70%). The majority of the people reported they don't have problems with self-care (79%) **(Figure 1)**.

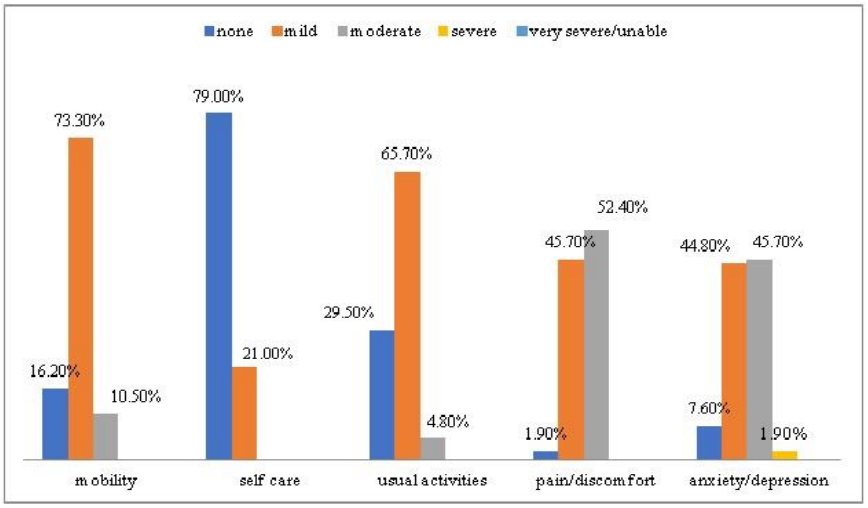

Figure 1. Distribution of diabetes and hypertensive patients reporting levels 1 to 5 by dimensions.

The mean EQ index and mean EQ VAS score were 0.78±0.09 and 58.43 ± 10.882 having a minimum of 0.567, a maximum of 1 for EQ index, and a minimum of 40, a maximum of 89 for EQ VAS score respectively. **Table 6** illustrates the mean EQ Index value (±SD) of patients based on their socio-demographic association. The model showed that female gender, greater age, and lower education level all were significantly associated with their lower quality of life, and health outcome measures for both EQ-5D index and EQ-VAS score ($p<0.05$). However, being employed and having a positive family history of diabetes and hypertension showed no correlation with the EQ index whereas being employed increased the EQ VAS score by 4.89% **(Table 6)**.

Table 6. Association of socio-demographics with EQ index and EQ VAS

Characteristics	Category	Mean EQ Index ± SD	P value	Mean EQ VAS±SD	P value
Age	**<65**	0.808 ± 0.087	<0.001*	61.67± 10.278	<0.001*
	>65	0.733 ± 0.773		52.95±9.714	

Gender	**Male**	0.806 ± 0.887	0.004*	61.83±10.57	0.001*
	Female	0.755 ± 0.086		55.09±10.14	
Education	**Illiterate**	0.733 ± 0.079	<0.001*	58.48±8.452	<0.001*
	Literate	0.814 ± 0.083		63.52±11.587	
Occupation	**Unemployed**	0.766 ± 0.88	0.094	55.96±10.051	0.017*
	Employed	0.794 ± 0.091		60.85±11.212	
Family history	**No/not known**	0.784 ± 0.822	0.532	57.7±10.668	0.411
	Present	0.774 ± 0.101		59.43±11.218	

** indicates having association i.e. P-value<0.05*

This study aimed to determine the knowledge, attitude, practice, and health-related quality of life among comorbid diabetes and hypertensive patients.

In this study, female patients were relatively high (50.5%) as compared to male patients. This finding coincides with a study in Uganda by Kaddumukasa *et al*. and Arisegi *et al*., where female respondents were higher than males representing 68% and 65.7% respectively [14, 15]. However, previous survey in Nepal shows higher prevalence of comorbid diabetes hypertension among males [16]. The mean age of the respondents in this study was 49.40 ± 11.11 years, this compares well with the findings in a study conducted in Manipur India by Shah *et al*., where most respondent were between the ages of 40-60 (64.8%) [17]. Regarding education, in our study, 41.9% of the patients were illiterate while 21.9% had only primary education. Illiterate patients showed significantly lower KAP scores than literate. Similar to our study, a study conducted by Mekonnen *et al*. in Ethiopia showed that around 25.10% of participants had no formal education, and respondents having lower education status were more likely to have a negative attitude than participants with a higher educational level [18].

According to our study, the majority of patients reported they never follow regular physical exercise (81%) and have a habit of consuming controlled planned diet (74.3%). Healthy lifestyle is crucial for proper control and management of chronic disorders like diabetes and hypertension. A study by K. Y *et al*. on the effects of lifestyle modification on metabolic syndrome found that patients' lifestyle modification index significantly reduced mean values for SBP by 6.4 mmHg, DBP by 3.3 mmHg, triglycerides by 12.0 mg/dl, waist circumference by 2.7 cm, and fasting blood glucose by (11.5 mg/dl) [19]. In our study, most of the participants did not have a regular follow-up for routine check-ups (95.3%). Patients with diabetes and hypertension should have their eyes and vital organ examined once a year or twice a year. Furthermore, Patients should undergo routine monitoring of their blood sugar or blood pressure level. Similarly to our study, findings from other studies also demonstrated that patients with diabetes or hypertension had poor practice for getting regular follow-ups, routine blood pressure and blood sugar monitor, and routine eye and vital organ exam [10, 20]. Regular self monitoring, follow up and medical screening can not only aid in the early diagnosis and treatment of chronic disease, but they can also enhance patients' health awareness, prevent disease complications and motivate patient adoption of a balanced diet and healthy lifestyle. We recommend that health authorities and concerned departments should urge to strengthen chronic disease management and monitoring programs, and provide services such as free medical examination campaign, particularly for the elderly and patients with low economic status, as part of public health initiatives.

In our study, patients have relatively low attitude and practice scores compared to knowledge scores. A similar study from Guntur on the assessment of KAP levels in hypertensive and diabetic shows responders had good knowledge but poor attitude and practice toward the disease [21]. The disparity between knowledge and practice may be attributed to the fact that they were aware of the order to control high blood sugar and blood pressure, but they may not understand the best ways to do so.

Our findings indicate a robust link between age, gender, education, and QoL in patients with diabetes and hypertension. In our study, the mean EQ-5D utility for patients with diabetes and hypertension was 0.78 and ranged from 0.567 to 1.0. The mean utility was slightly lesser than in Japan [22] but higher than in Bangladesh [23]. The current study revealed that older age had higher mobility problems and other dimensions in QoL as compared with ages <65 years. This is consistent with previous research, which indicated that the high HRQoL was seen in age <60 years [23] possibly because diabetes and hypertension is a chronic disease that progresses with age and increasingly affects health. In the current study, people with diseases who have a low degree of education have a lower quality of life. In this scenario, education is tied to knowledge; highly educated patients can develop coping mechanisms and a strong understanding of information. Another study by Andrade et. al revealed that people with diabetes with a greater education degree have a better quality of life [24]. A similar study by Pappa *et al*., in Greece shows that primary education had lower outcomes for QoL [25] indicating the importance of improving the overall education level of the population.

The practice of regular physical exercise is very poor in our study. Study showed that, physical activity to be a protective factor for preventing disease related metabolic abnormalities and aids towards better health outcomes in Diabetes and hypertension patients, showing that regular exercise is beneficial for improving diabetes and hypertension patients' HRQoL [26]. Our results were consistent with other studies, which had a consistent link between self-reported physical activity and health-related quality of life and found that better health-related quality of life were associated with good physical activity whereas prolong sedentary behavior was linked to diminish health-related quality of life [27].

Conclusion

The current study found that most patients lack adequate knowledge, attitude, and practice for diabetes and hypertension. The HRQoL was comparatively lower among age groups over 65 years, female gender, and illiterate patients. There is an urgent need for health educational and interventional programs particularly focusing on chronic diseases such as diabetes and hypertension to people in these areas. Furthermore, educational programs should be repeated at appropriate intervals to guarantee that learned material is implemented.

Limitations

One of the limitations of the present study is it was conducted in a single hospital setting; the findings may not be generalized to the entire population of the province or nation. Furthermore, since the study was conducted in the outpatient department, the participant's EQ VAS score may be influenced by their recent disease condition requiring physician consultation.

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