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**Knowledge, Attitude and Practices Regarding Third Wave of
Coronavirus Pandemic among the Community People in
Kathmandu Valley, Nepal**

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Abstract

Background: Coronavirus pandemic (COVID-19) is a massive global health crisis. This paper aims to describe knowledge, attitude and practices (KAP) regarding Coronavirus pandemic among the community people residing in Kathmandu Valley.

Methods: We have applied cross-sectional study design in which required data were collected from 312 sample households using accidental sampling procedure. We applied self-administered hand given questionnaire (Cronbach's alpha 0.97) consisting 105 items variables (35 each for KAP) on a six-point Likert scale, from 0(not applicable) to 5(strongly agree).

Results: The study found that summative values of attitude (\bar{x} 3.71-3.97) and practices (\bar{x} 3.70-4.12) found comparatively weaker than knowledge (\bar{x} 3.09-4.24). About 124(39.7%) respondents have associated comorbidities allied with social distancing, masking/globing behavior, hand washing and sanitizing, physical exercise, PCR test/vaccination, health seeking behavior. KAP index is largely defined by variable family monthly expenditure on food/vegetable and their KAP index was significantly higher than others. However, presence of family members suffered from COVID-19 has negatively contributed to the KAP index.

Conclusion: The denser views on KAP are the consistently with closer to agree and strongly agree points. KAP index found significant but skewed to left for Kirtipur and skewed to right for Lalitpur and Suryabinayak.

Novelty: The municipal governments have been offering efficient and dedicated health services to the community people. However, knowledge, attitude and practices among the community people of residing in Kathmandu, Bhaktapur and Lalitpur found different. Therefore, the results of the study are valuable to policy makers and planners especially in the areas of healthcare and public health during pandemics.

Keywords: Coronavirus pandemic; Community people; Knowledge; Attitude; Practice

Introduction

The COVID-19 outbreak, recognized as a pandemic, marks a crucial health crisis on a global scale ([Dahal & Khatri, 2021](#)). The pandemic outbreak originating from Wuhan, China in late 2019 has spread over 228 countries and territories. World Health Organization declared it a pandemic in March 2020 ([WHO, 2020a](#)). As of April 13, 2024, there have been 704,753,890 confirmed COVID-19 cases, 675,619, 811 recovered cases and 7,010,681 death cases worldwide ([Worldmeter, 2024a](#)). The United States, India, and Brazil are among the most seriously afflicted countries ([Elflein, 2022](#)). As of October 11, 2022, there have been 1,003, 450 confirmed COVID-19 cases in Nepal, with 991,322 recovered cases and 12,301 death cases ([Worldometer, 2024b](#)). The COVID-19 virus causes severe acute respiratory syndrome (SARS-CoV-2) in human lives. The first COVID-19 case in Nepal was confirmed on January 23, 2020, when a 31-year-old student tested positive for the disease after returning to Kathmandu from Wuhan on January 9th. It was

also the first time COVID-19 was detected in South Asia ([NDTV, 2020](#)). On April 4, the first incidence of local transmission in Nepal was verified in Kailali District. On the 14th of May, the first death occurred. This triggered the first wave nationwide lockdown from March 24, 2020, until July 21, 2020 ([Pradhan, 21 July 2020](#)). On Thursday, April 29th, the second lockdown was started and lifted on May 13. The third smart lockdown began on Thursday, April 29th, 2021, and halted all non-essential travel, business, and services, allowing the population just 5am-10am to purchase food and basics. In the COVID period, government and non-government agencies successfully executed flex print installation, loudspeaker announcements, interaction, and orientation programs to ensure knowledge of the virus's preventive measures. Orientation on preventive measures such as hand washing, mask use, adhering to government norms, preserving social distance ([Acharya et al., 2022](#)), caring for and assisting children, the elderly, and persons with disabilities in maintaining cleanliness has also been conducted at the community.

The perceptions of the community people have been measured through seven indicators such as social distancing, masking and gloving behavior, hand washing and sanitizing, physical exercise, PCR test, and vaccination, health-seeking behavior (anti-body and food seeking behavior) and associated comorbidities ([Wu & Munthali, 2021](#)). First, social distancing reduces human interactions. It is a non-pharmaceutical intervention to reduce the rate of transmission of contagious diseases. Second is the use of face mask which used to be practiced for healthcare activities, but not in the lifestyles of majority of people ([Tateo, 2021](#)). However, during pandemic, CDCP encouraged to wear face masks in public places which is one of the primary protections against the virus ([CDCP, 2021](#)). Third, hand washing and using hand sanitizers ([Morgan, 2020](#)) not only maintain hygiene practices but also help to resistant to survive virus. Fourth, (less) physical exercise on non-communicable disease are well-documented ([Anderson & Durstine, 2019](#)) and also impact the immune system, and thus affects the bodies' anti-viral defenses ([Walsh et al., 2011](#)). A systematic review concluded that poor health literacy is directly and indirectly associated with low precautionary behavior of the people.

In the case of India, the study also found that regular fitness workout at home during the lockdown greatly helped to overcome psychological issues and fitness concerns ([Kaur et al., 2020](#)). Fifth, vaccines are one of the most promising solutions to the COVID-19 pandemic. The first mass vaccination program started in early December 2020, and millions of doses of vaccines have been administered ([WHO, 2020b](#)). Sixth, healthcare-seeking behaviour includes the timing and types of healthcare service utilization and which affect population health outcomes ([Poortaghi et al., 2015](#)). Delayed medical attention has been shown to associate with an increased risk of unfavorable outcomes ([Prentice & Pizer, 2007](#)). Along with allopathic medicines, use of herbal medicines to treat Coronavirus pandemic is a widespread practice among the community population in Uganda ([Musoke et al., 2021](#)) and Seoul, Korea ([Ang et al., 2021](#)). Seventh, Coronavirus pandemic has had direct and indirect effects on people suffering from chronic diseases or comorbidities.

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The preliminary findings showed respiratory illness, diabetes, and chronic kidney diseases were the most common comorbid conditions associated with COVID-19 deaths in Nepal ([Rayamajhee et al., 2021](#)). Empirically, Nepal Health Research Council took the initiative to lead a total of 26 SARSCoV- 2/COVID-19 research projects, amongst which only one study tried Public understanding and their response about COVID -19 in Nepal ([MoHP, 2021](#)). In the context of Nepal, researches related COVID were conducted targeting migrants, scholarly cohort aiming to examine risk perception but not urban community people which might be different from settlements to settlements ([Sharma et al., 2021](#); [Khanal et al, 2024](#)). Therefore, this study aimed to analyze knowledge, attitude, and practices regarding Coronavirus pandemic among the community people in Kathmandu, Lalitpur and Bhaktapur districts located in Kathmandu valley.

Materials and Methods

Believing on experimental and absolute truth of knowledge, we applied post-positivism research paradigm ([Creswell, 2014](#)) and cross-sectional study design ([Setia, 2016](#), [Khatri, 2020](#)) for explaining the research issue. In doing so, the respondents are regarded as paramount to the researchers whose information helps to test relationships between studied variables ([Cohen et al., 2000](#)). More so, we followed quantitative approach to collect required data from selected respondents at a single point of time without influencing them. Due to time and budgetary limitations, this study has been conducted in selected settlements in Kathmandu, Lalitpur and Bhaktapur districts in Kathmandu valley.

This study followed sample size determination criteria for calculating sample size in relation to the research method in which 100 samples should be identified for each major sub-group (sample population) and between 20 to 50 samples for each minor sub-group (sample respondents) ([Cohen et al., 2000](#)). Accordingly, 312 sample respondents were selected from major sub-group (3 Wards or three strata) and 3 minor sub-groups (34 to 35 respondents from three settlements of each strata) (see in [Table 1](#)).

Table 1: *Sample Size Determination*

Strata	Ward No.	Settlements	Population	Sample population	Sample respondents
Kathmandu: Kirtipur municipality	9	Wakuncha	105		35
		Naya bazaar	215	104	35
		Dhokasi	186		34
Lalitpur: Lalitpur metropolitan city	14	Buddha marg	235		34
		Duniya danda	168	104	35
		Aasis tole	136		35
Bhakatapur: Suryabinayak municipality	3	Sanyukta basti	189		34
		Adhikari basti	148	104	35
		Ghimire basti	112		35
Total			1494	312	312

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The required data were collected using of self-administered questionnaires consisted of three constructs: knowledge, attitude, and practice. Each construct again consisted of seven measurement indicators; 1) social distancing; 2) masking/globing behavior; 3) hand washing/sanitizing; 4) Physical exercise; 5) PCR test and vaccination; 6) health seeking behavior; 7) associated comorbidities. Then the indicators have been translated into 105 questionnaire items (35 for each construct). More so, primary data were collected through field survey that included 105 items on a six-point Likert scale, from 0(not applicable), 1(strongly disagree), 2(disagree), 3(neutral), 4(agree), 5(strongly agree).

The sets of questionnaires were filled up by 312 respondents from 26th September 2021 to 30th October 2021. During the field survey the researchers consulted with local politicians, elected representatives and administrative staffs, health workers, and member of youth club and briefly shared about this study. This interaction helped to seek local support for the survey. Before collecting data, we got participants' consent and assured them to maintain privacy of their information. Most of the respondents happily contributed 25 to 36 minutes time to fill up questionnaires. More so, in our study population, Cronbach's alpha for the response to KAP regarding Coronavirus pandemic was 0.97 (items 21 and range 18.05 to 21.18), indicating excellent internal reliability of this scale (Taber, 2017). Besides, significant correlation at the 0.01 level between knowledge and attitude indexes ($r = 0.91^{**}$) and knowledge and practice indexes ($r = 0.89^{**}$) also prove no issue of validity.

Finally, we used SPSS version 25 to organize, summarize, describe and generalize data. We applied multiple statistical tools such as central tendency, Likert scale (5: strongly agree, 4: agree, 3: neutral, 2: disagree, 1: strongly disagree and 0: not applicable) or summative analysis (Chakrabarty, 2014), composite indices (Sava, 2016), normality test (Das & Imon, 2016) and multiple regression models (Field, 2009).

Results

The Kathmandu Valley is the largest urban center of Nepal with an approximate 2.9 million populations. It is one of the fastest growing metropolitan areas in South Asia with 2.5 million population by 2010 with an annual growth rate of 4 percent (World Bank, 2013). The valley includes two metropolitan cities and ten municipalities which are situated in Kathmandu, Lalitpur and Bhaktapur Districts. The study is conducted in Kirtipur municipality, Lalitpur metropolitan city and Suryabinayak municipality.

Kirtipur is one of the historical cities dominated by Newar community within the Kathmandu district. It is situated in 7 km south-west of Kathmandu Metropolitan city. It has 81782 total population with 43,378 (53%) male and 38,404 (47%) female population (CBS, 2021a). The municipality has recorded total positive cases 4642 and 40 death cases until April, 2022 (Kirtipur

[Municipality, 2022](#)). Lalitpur metropolitan city, popularly known as Patan, is also Newar community dominant city within Lalitpur district. It is located in about 5 kilometers south-east of Kathmandu. The metropolitan has total 284,922 populations with 145,924 males and 138,998 females residing in 70,256 households ([CBS, 2021b](#)). The metropolitan has recorded total 21053 positive cases, 19084 recovered cases and 236 death cases until January 2022 ([Lalitpur Metropolitan City, 2022](#)). And ward number 14 has recorded 1943 total cases (987 F & 956 M), 1817 recovered cases, 109 active cases, and 17 death cases. Suryabinayak municipality is located 2 km far from Bhaktapur city within Bhaktapur district. The municipality has total 137,971 populations with almost equally two half 68,971 (50%) males and 69,000 (50%) females ([Suryabinayak Municipality, 2021](#)). As of 1st January 2022, the municipality has recorded total 9710 positive cases (4570 F & 5140 M), 9643 recovered (4537 F & 5106 M) and 67 death cases (33 F & 34 M) and ward number 3 recorded total 1191 positive cases (580 F & 611 M), 1187 recovered cases (578 F & 609 M) and 4 death cases (2 F & 2 M). The municipality immunized total 64255 doses of vaccine (20511 COVI-shield, 36634 Vero cell and 7110 Johnson) to the community people ([Suryabinayak Municipality, 2021](#))

As of 20th July 2022, there have been total 982,062 confirmed cases (\bar{x} 1304), 968,126 recovered cases (\bar{x} 1285) and 11,954 death cases (\bar{x} 16) in 753 local levels. From the decentralization viewpoints, average statistics for confirmed, recovered and death cases found higher in Lalitpur metropolitan city comparing to Kirtipur municipality and Suryabinayak municipality. [McCafferty and Ashley \(2021\)](#) also found strong correlation between population densities (frequency of human interaction) and effect of Coronavirus pandemic death cases. However, these three local governments in Kathmandu valley have deployed CICT (Case Investigation and Contact Tracing) team for identifying positive cases, monitoring quarantine and series of vaccine programs. Further, Kirtipur municipality and Lalitpur metropolitan have been offering yoga and health education, quarantine and medicine distribution, awareness raising training and COVID dedicated ambulance service facilities and antigen facilities. It was due to the collective efforts of health care institutions, social organizations, media and local intellectuals, Suryabinayak municipality offered free service rapid diagnosis test (RDT) and also provided cell numbers of doctors'/health workers to the community people in Kathmandu Valley. Even in Bangladesh, [Hernandez-Vasquez et al. \(2020\)](#) have recommended to establish joint platforms among the media, healthcare institutions and other stakeholders for disseminating public health message among the people. The study also found effective and efficient health service delivery practices of the local government in Kathmandu Valley. This is possible due to the devolved power jurisdictions of democratic republican governance ([Adhikari et al., 2023](#)).

Characteristics of the respondents

Of the total, 144(46.2%) respondents age group falls above 37 years. Female respondents 134(42.9%) are slightly less than male respondents 176(56.4%). Majorities 256(82.1%) of the

respondents are Hindu that is followed by Buddhist 43(13.8%) and Christian 11(3.5%) religious groups respectively. Majorities 155(49.7%) of the respondents are Janajati dominantly from Newer community that is followed by Brahmin 69(22.1%) and Chhetri 64(20.5%) caste groups respectively. Most 122(39.1%) of the respondents have nuclear family with 2-5 family members. Of the total 298 respondents, majorities 269(86.2%) have medium family wellbeing whose family members are mostly involving in business, entrepreneurship, private job and remittance. Of the total 256, majorities 159(51.0%) of the respondents' monthly family income falls Rs. <100000 that is followed by 72(23.1%) respondents earns between Rs. 100000-199000 (\bar{x}). Only one (0.3%) respondents earns Rs. >300000 as well. The average monthly expenditure for food and vegetable, non-vegetable items, fruit and honey, medical treatment and insurance found Rs. 19816.91, 7313.21, 4505.74, 7741.75 and 61236.84 respectively.

Most 138(44.2%) of the respondents' completed primary education and only 34(10.89%) respondents completed higher education in social science, education and management subjects. Of the total 257, majorities 238(76.3%) of the respondents have <2 school going children whereas of the total 202, majorities 180 (57.7%) of the respondents have < 2 college going children. Of the total 226, most 128(41.0%) of the respondents have participated in health and hygiene related trainings. Of the total 124(39.7%) respondents' family members are suffering from associated comorbidities like heart disease (10.6%), diabetes (9.0%), thyroid (4.8%) and tuberculosis (1.9%). In the case of Mexico, of the 51 053 COVID-19 patients enrolled in the final analysis, 27 667(54.2%) had no chronic conditions, while 13 652 (26.7%), 6518 (12.8%), and 3216(6.3%) were reported to have 1, 2, or 3 simultaneous conditions, respectively ([Hernandez-Vasquez et al., 2020](#)). Of the total, 67(21.4%) respondents' family members (1-4 members) were severely suffered from Coronavirus pandemic. Most 54(80%) of the COVID-19 severely suffered family members are belonging to medium family wellbeing group. In addition, [Hawkins \(2020\)](#) discovered that towns in Massachusetts, USA, with higher rates of poverty, lower incomes, less insurance coverage, more unemployment, and a higher proportion of the workforce worked in critical services, such as healthcare, also had higher rates of COVID-19 ([Hawkins, 2020](#)). Majorities (53.8%) of the respondents' family members got double doze vaccine. Regarding the pandemic death case, only 3 respondents from 121(38.8%) respondents reported death of one family member. Majority 191(61.2%) respondents didn't response to the question.

Indicator wise KAP measurement

Knowledge, attitude and practices regarding Coronavirus pandemic have been measured through Likert scale or summated scale for assessing and quantifying attitude and opinions of the respondents. Each constructs contains 35 item variables (6 points: 5 to 0) developed based on seven indicators such as social distancing, masking behavior, hand washing and sanitizing, physical exercise, PCR test/vaccination, health seeking behavior and associated comorbidities. The summative method was applied to analyze mean value or most of the denser view of the

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respondents ([Chakrabarty, 2014](#)). The denser view of the respondents for knowledge (3 to ≥ 4 points) found satisfactory compare to attitude (3 to < 4 points) and practices (3 to ≥ 4 points) as well ([Table 2](#)). The findings are similar to Sharma et al. (2021), who revealed that 28.0 percent of the participants (members of I/NGOs) knew about the pandemic, 41.0% had positive attitudes, and 54.0 percent experienced good practices.

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Table 2: Descriptive Statistics on Knowledge, Attitude and Practices related Variables

Indicators	Knowledge				Attitude				Practice			
	N	Min-Max	\bar{x}	SD	N	Min-Max	\bar{x}	SD	N	Min-Max	\bar{x}	SD
Social distancing	310	0-5	4.24	2.95	308	0-5	3.88	4.33	308	0-5	3.91	4.41
Masking behavior	301	0-5	4.05	3.18	307	0-5	3.89	4.16	304	0-5	4.02	3.15
Hand washing/sanitizing	308	0-5	4.03	3.44	309	0-5	3.92	3.71	310	0-5	3.97	3.99
Physical exercise	294	0-5	3.63	5.27	309	0-5	3.71	5.11	308	0-5	3.84	5.35
PCR test/vaccination	306	0-5	3.85	4.45	310	0-5	3.97	3.78	305	0-5	4.12	4.88
Health seeking behavior	312	0-5	4.09	3.96	306	0-5	3.86	5.45	310	0-5	3.98	5.46
Associated comorbidities	303	0-5	3.09	3.85	310	0-5	3.83	4.01	303	0-5	3.70	6.92

Measurements of association

We applied composite index, normality test (hypothesis 1) and multiple regressions model (hypothesis 2) (MRM) for measuring the associations between study variables. Composite index (function f from $R^n \rightarrow R$ corresponding to n -number of component variables) that helps to calculate single factor from multiple variables (Sava, 2016). In doing so, knowledge index (N=273, Min 0, Max 35, \bar{x} 4.01, SD 0.64), attitude index (N=289, Min 0, Max 35, \bar{x} 3.87, SD 0.74) and practice index (N=287, Min 0, Max 35, \bar{x} 3.96, SD 0.75) are calculated by computing 35 likert scale variables related to seven indicators for each index. Further, KAP index (N=255, Min 0, Max 105, \bar{x} 3.93, SD 0.71) is calculated by computing knowledge index, attitude index and practice index or total 105 Likert scale variables.

Hypothesis 1

H₀: KAP index is normally distributed in Kirtipur, Lalitpur and Suryabinayak strata

H₁: KAP index is not normally distributed in Kirtipur, Lalitpur and Suryabinayak strata

Normality of data presents core assumption of the observations. Whether populations from where the samples are collected are normally distributed or not (Das, & Imon, 2016). Normality is generally not observed from data generated from Likert Scale. Hence, the index value was calculated for examining normality of KAP index based on three strata (see in [Table 3](#)). The normality of KAP index found significant ($0.00 < 0.01$) for Lalitpur and Suryabinayak and found insignificant ($0.20 > 0.05$) for Kirtipur. This means, the knowledge index is normally distributed in Kirtipur whereas not-normally distributed in Lalitpur and Suryabinayak.

Table 3: Normality of KAP Index based on Strata

Index	Settlements	Kolmogorov-Smirnov ^a		
		Statistic	Df	Sig.
KAP Index	Kirtipur	.08	86	.20
	Lalitpur	.22**	109	.00
	Suryabinayak	.29**	60	.00

Hypothesis 2

H₀: There is no relationship between KAP index and predicted variables

H₁: There is a relationship between KAP index and predicted variables

MRM serves for the dependent variable (index data) through the help of multiple independent variables (nominal/scale) in a certain value ([Field, 2009](#)). Model for the dependent variable KAP index (min =0, max=105, mean 3.93, SD 0.71) concerning 14 independent variables (age, sex, comorbidities, family system, religion, caste, parents involvement in health training, family well-being, COVID+ cases, severely affected cases, vaccinated, COVID-19 death cases,

monthly income and monthly expenditure in food/vegetable) is given below. Results of model as presented in [Tables 4](#) and [Table 5](#) indicated that there was a collective significant effect between the independent variables with the dependent variable the KAP index with $F(14, 79) = 5.01$, $p < 0.05$, $R^2 = 0.47$.

Table 4: Model Summary - SDI

	SS	Df	Mean Square	F	Sig.	R= 0.68 R ² = 0.47 Adjusted R ² = 0.37 SE of the estimate = 38.99 Durbin-Watson =2.35
Regression	106833.94	14	7630.99	5.01	.00	
Residual	120140.49	79	1520.76			
Total	226974.43	93				

Table 5: Coefficients for Predictors to Describe the KAP Index

	B	SE B	T	Sig.	Tolerance	VIF	
(Constant)	412.85**	69.10	5.97	.00			
Age	5.64	5.71	.13	.98	.35	2.78	
Sex	-3.02	11.03	-.03	-.27	.7	1.88	
Family comorbidities	-33.48**	11.26	-.41	-	.00	.34	2.92
				2.97			
Family system	-1.14	11.54	-.01	-.10	.92	.58	1.72
Religion	-17.86	10.64	-.20	-	.09	.45	2.21
				1.67			
Caste	-8.15	8.37	-.17	-.97	.33	.22	4.52
Parents involvement in health related training	1.00	14.66	.01	.06	.94	.30	3.29
Family wellbeing	28.67	19.78	.17	1.45	.15	.44	2.24
COVID+ cases	-9.21	7.44	-.23	-	.22	.19	5.20
				1.23			
Severely affected cases	12.24	11.45	.24	1.06	.28	.12	8.06
Vaccinated	-2.54	4.19	-.06	-.60	.54	.587	1.70
COVID-19 death cases	54.62*	27.64	.19	1.97	.01	.685	1.46
Monthly income	-4.79	13.16	-.04	-.36	.71	.551	1.81
Monthly expenditure food/vegetable	.002**	.00	.40	2.77	.00	.310	3.23

* $p < .05$, ** $p < .01$

Discussions

Regarding knowledge indicator wise measurement ([Table 2](#)), the statements related to social distancing (\bar{x} 4.24), masking behavior (\bar{x} 4.05), hand washing/sanitizing (\bar{x} 4.03), and health seeking behavior (\bar{x} 4.09), indicators got highest mean values which proves that most of the denser views are the consistently with closer to strongly agree points. However, in the case of attitude

section, the statements related to all the indicators got mean values ranging from 3.71 to 3.97. Likewise, in the practice section, the statement related to masking/globing behavior (\bar{x} 4.02) and PCR test/vaccination (\bar{x} 4.12) got highest mean values. The study found that most of the family members were vaccinated. Contrary to that, In the case of Western Nepal, of the total, 105 pregnant females (age ranged from 16 through 40 years) infected with COVID-19 during the third wave, only 13 pregnant females underwent vaccination ([Pandit et al., 2024](#)). However, during third wave of COVID-19, infection with the Delta variant in Nepal were less than in other regions of the world despite low rates of vaccination.

The statement related to physical exercise for knowledge (\bar{x} 3.63), attitude (\bar{x} 3.71) and practice (\bar{x} 3.84) found comparatively low as few of them practiced foot walk. According to [Namsawang et al. \(2019\)](#), short foot exercises combined with neuromuscular electrical stimulation were found to be more beneficial than short foot exercises alone in treating or preventing abnormalities in patients with flexible flat feet.

The inconsistent average values on knowledge, attitude and practices indicate that the series of lockdowns have not only reducing the possibilities of new pandemic infections but also affecting the overall physical, mental, social and spiritual health of the people. This might be reasoning that majority 191 (61.2%) respondents didn't response to the question related to pandemic death cases in their family members. However, only 3 suicide cases we reported in the study area as during first month of the nationwide lockdown, a total of 487 people committed suicide, which is 20% more compared with mid-February to mid-March, when the number stood at 410 ([My Republica, May 21, 2020](#)). The normality of strata wise KAP index found significant $0.20 < 0.05$ for Kirtipur but found insignificant for both Lalitpur and Suryabinayak ([Table 3](#)).

For the multiple regression model, all the predictor variables were not found significant. Among them comorbidities ($t = -2.97, p < 0.05$), monthly expenditure on food/vegetable ($t = 2.77, p < 0.05$) and COVID-19 death cases ($t = 1.97, p < 0.05$) are the significant predictors in the model. The findings indicate that community well-being and community health are interrelated. In this respect, [Kim et al. \(2019\)](#) also discovered relationship between low income, bad health and mediating role of unmet needs among Koreans. The marginal effect on unmet needs due to financial constraints found ranged from 14.7 to 32.9 percent and from 7.2 to 18.7 percent in the lagged model. This means that Peoples' health behavior is influenced by multiple determinants. Now health literacy is taken as social measures to prevent COVID ([Khanal et al., 2023](#)).

The model presented in [Table 5](#) has no issue of multicollinearity as VIF for the most of the predictors was less than 5. Moreover, the accepted level of the auto correlation (Durbin-Watson = 2.35) ([Table 4](#)) signifies that the KAP index is well explained by the above-mentioned predictor variables. However, KAP index is largely defined by the variable family monthly expenditure food and vegetable. That means, the family members who expense high in food and vegetable are on top of KAP regarding Coronavirus pandemic, their KAP index was significantly higher. However,

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it was surprising to see that presence of family members suffered from COVID-19 has negatively contributed to the KAP index.

Conclusion

The study has revealed the fact that the community ‘people’ has a positive knowledge, attitude, and practice (KAP) towards the COVID-19 pandemic. Nonetheless, some improvements have to be implemented especially in attitudes and practices in comparison with knowledge. The research points to the power of social environment on the KAP results; for instance, higher monthly pie/vegetable expenditure on the family to the KAP index will ensure economic stability while you will probably be more inclined to pandemic-related behaviors. In contrast, the presence of COVID-19 cases among family members leads to a decline in the KAP index, meaning that affected homes should get the necessary assistance or targeted interventions. With respect to the settlements of the districts, Kathmandu, Bhaktapur, and Lalitpur are the ones that recurrently show the differences. Implementation of the city administration in providing efficient health services during the lockdown has shed light on the urgency of continuing support and allocation of resources to keep community health to the maximum. These results are valuable to policy makers and planners especially in the areas of healthcare and public health during pandemics.

Conflict of Interest

The authors have no conflicts of interest associated with the material presented in this paper.

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Author Contributions

Conceptualization: RBP, BBK, ET. Tools design: RBP, DA, SPK. Data Curation: BBK, RBP. Data analysis and critical writing: RBP, DA, ET. Methodology: BBK, ET. Writing – original draft: RBP, SPK, Final Editing: RBP, ET

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