

Study of Nutritional Knowledge, Attitude, and Practice among Parents of Young Children in Public and Private Schools in Rural Nepal

Dinesh Prasad Joshi Ratala¹, Sharad Chandra Rai², Pratisha Joshi³, Aanchal Shrestha⁴ & Mahesh Sarki⁵

¹ Ph. D. Candidate, Graduate School of Arts and Sciences, Human Security Program, The University of Tokyo, Japan

² Ph. D. Candidate, Graduate Program in Sustainability Science, The University of Tokyo, Japan

³ Master of Arts in Sociology, Central Department of Sociology, Tribhuvan University, Nepal

⁴ Bachelor of Public Health, National Academy for Medical Science, Purbanchal University, Nepal

⁵ PhD, University of Basel, Switzerland

Correspondence: Dinesh Prasad Joshi Ratala, Ph. D. Candidate, Graduate School of Arts and Sciences, Human Security Program, The University of Tokyo, Japan. E-mail: dratala@gmail.com

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Abstract

This study examines the Nutritional Knowledge, Attitudes, and Practices (KAP) among parents of young school children in Eastern Nepal, with a specific focus on the impact of school type and gender. A survey conducted among 139 parents of grade 4 to 6 students in Halesi Tuwachung Municipality, Khotang district, examined parental KAP in relation to the type of schooling their children received, and distinguishing between private and public schools. Utilizing guidelines from the Food and Agriculture Organization (FAO), data collection involved home visits and response analysis. A higher proportion of female, 92 out of 139 attributes to the emigration of males, which has resulted in a greater availability of females compared to their male counterparts. Significant variations were found in parental KAP based on the type of schools attended by their children ($p < 0.002$ for knowledge, $p = 0.08$ for attitude, and $p < 0.01$ for practice). Parents of children in private schools exhibited higher scores in knowledge and practice compared to those in public schools. Gender differences persisted, with female parents generally scoring lower in knowledge. The study also revealed a lower nutritional knowledge among females ($\beta = -1.7$, $p = 0.06$). These findings may hint the socio-economic influences on nutritional KAP disparities and advocate for targeted interventions involving both parents, addressing differences across private and public schools. The study calls for future research with larger sample sizes to provide a more comprehensive understanding of these dynamics, suggesting a focus on gender-specific assessments within nutritional policies or national projects led by the Government of Nepal (GoN).

Keywords: nutrition, knowledge, attitude, practice, parents, schools

1. Introduction

In recent years, the growing recognition of the profound influence of nutrition on overall health has underscored the importance of understanding and shaping the Knowledge, Attitude, and Practice (KAP) related to nutrition.

According to some researchers, such as Huang et al. (2021), nutrition knowledge encompasses understanding nutrition and health concepts, including the role of diet in health, disease, and adherence to dietary guidelines. This knowledge is closely tied to improved diet quality, fostering healthier consumer choices (Deshmukh et al., 2017). Nutritional attitudes involve thoughts, behaviors, and beliefs regarding food, measured through perceived outcomes (Bandura, 2000; Santos Alvarenga et al., 2008). Observable actions related to dietary patterns constitute nutritional practices (Naeeni et al., 2014). The intricate interrelationship between these variables enables the derivation of valuable conclusions and suggests crucial nutritional interventions (Alaunyte et al., 2015; Folasire et al., 2015; Saeidlou et al., 2016).

A considerable body of research suggests that the parental level of knowledge, attitude, and practice significantly influences a child's development and impacts the health outcomes of family members (Bradley & Corwyn, 2005). The quality of care administered to a child, particularly regarding health and nutrition, directly affects the child's

physical and mental growth (Tandon et al., 2016).

A report by the Research Centre for Educational Innovation and Development (CERID) (CERID, 2009) indicates that parental knowledge plays a crucial role in shaping correct attitudes and practices towards children's healthcare and nutrition. In the context of Nepal, the report reveals that parental knowledge about early childhood development was comparatively poor compared to parental attitudes and practices. Another study conducted among mothers in Sunsari (Note 1) found that they possessed adequate knowledge, positive attitudes, and good practices regarding malnutrition. The association between educational level and knowledge was statistically significant, indicating that mothers with adequate knowledge were predominantly literate (Dahal et al., 2020).

In contrast, a study by Oli et al. (2018) among mothers revealed that they possessed good knowledge and a positive attitude, yet their practices were lacking. The study also showed that their children's behavior score was associated with the mothers. Additionally, a study on Nepalese mothers' perceptions indicated that their educational background did not significantly impact their children's knowledge regarding a healthy diet and physical activity (Oli et al., 2015). Angeles - Agdeppa et al. (2019) demonstrated that improving the nutritional KAP of mothers through nutritional education awareness significantly contributed to enhancing their children's nutritional status. Mothers with better nutrition knowledge and practices were associated with improved nutritional status, as evidenced by better height, weight, and Body Mass Index (BMI) among their children.

The nutritional KAP among Jordanian elderly individuals exhibited poor knowledge, negative attitude scores, and inadequate practices, particularly those with lower education levels (Hammouh et al., 2023). Conversely, in Northern Ghana, women demonstrated above-average nutritional knowledge, positive attitudes, and good practices concerning nutritional issues (Sienso et al., 2022). On the other hand, school-aged children in the Gaza Strip, Palestine, exhibited adequate nutrition-related knowledge, positive attitudes, and commendable practices (Bilbeisi et al., 2022). In the same study, however, a significant proportion of these children experienced household food insecurity, highlighting a connection to the nutritional awareness of their parents.

Similarly, a study conducted in marginalized areas of Sri Lanka found a highly significant correlation between the nutritional knowledge, attitude scores, and BMI levels of reproductive-aged women. However, their nutritional practices differed based on education level, family, and income (Weerasekara et al., 2020). While the specific study differentiating nutritional KAP between urban and rural parents was not located, another study revealed that lower maternal educational status in rural areas increased the odds of severe child undernutrition (Anik et al., 2021).

Parents' nutritional knowledge undeniably plays a pivotal role in shaping children's dietary habits and physical activity (Woźniak et al., 2022; Adamo & Brett., 2014). A cross-sectional study conducted in Nepal revealed that caregivers' educational level and economic background significantly impacted the health status of schoolchildren, with recommendations for improvement emphasizing the active involvement of parents (Sharma & Budhathoki, 2023). In the Jhaukhel-Duwakot region (Note 2), nearly all assessed children exhibited fair nutrition practice, and the children's dietary and physical scores increased with their mothers' higher levels of education (Oli et al., 2018).

The thorough analysis of past studies on the KAP of nutrition among parents reveals a predominant focus on female parents, specifically mothers (women, elderly women, and reproductive-age women). This perspective assumes that mothers are the primary influencers of their children's nutritional behaviors. However, it is essential to recognize that male parents could also play a significant role as benefactors. Therefore, there has been insufficient attention given to analyzing the KAP of nutrition among parents based on gender, necessitating a broader exploration of both maternal and paternal influences on children's nutritional well-being.

Additionally, there is a need for greater clarity in distinguishing between the analysis of healthy eating knowledge and the actual implementation of that nutritional knowledge into practice (Saaka et al., 2014). The studies mentioned earlier provide limited evidence regarding the predictors of KAP among parents of early school-aged children in Nepal. Furthermore, there is a noticeable absence of analysis on parents' KAP concerning the schools their children attended.

To address these gaps, our study aims to compare the KAP of nutrition among both male and female parents, considering the schools (private or public) their children are enrolled in. This comparative analysis seeks to provide additional insights and perspectives, shedding light on potential differences in nutritional knowledge, attitudes, and practices between parents associated with private and public schools.

Remarkably, the commitment of the Government of Nepal (GoN) to nutrition has resulted in the development of a strategy aimed at improving nutrition behaviors through enhancing knowledge and attitude adopting a child-to-parent approach. Government entities such as the Curriculum Development Center (CDC) and the Department of Education (DoE) are actively collaborating with parents, designating them as major stakeholders. This

collaboration is evident in activities such as school health and nutrition programs. (Note 3)

The Nepal Demographic and Health Survey (NDHS) 2022 report (Note 4) highlights a decline in child malnutrition in Nepal, although several poor health outcomes persist. Of concern is the significant number of children aged 6-23 months who were found to be consuming sugary drinks and unhealthy foods, emphasizing the critical role of parental nutrition knowledge and awareness. Therefore, this study aims to comprehend the KAP of nutrition among parents of school children and identify the factors associated with it among parents.

2. Methodology

Our study utilized a cross-sectional analysis, drawing on survey data collected from parents whose children were enrolled in four schools within Halesi Tuwaching Municipality, Khotang District, Nepal.

Khotang, located in the Eastern region of Nepal, is a remote and hilly district facing challenges in internal and external accessibility, marked by the absence of all-weather roads. The difficult terrain has contributed to a lower literacy rate in the district, particularly among women, with only 38.8% being literate. Furthermore, a historical correlation exists between the challenging accessibility and the compromised nutritional status among children in the area.

The chosen schools for this study encompass two private institutions, namely YouMe School and Halesi Pathshala, along with two government schools, Shree Mahendradaya Secondary School and Shree Durkhim Secondary School. The survey, executed in March 2020, specifically focused on parents from each school with children in grades 4 to 6, culminating in the participation of 139 parents.

Originally intended to be conducted at the school premises, the survey encountered challenges when parents displayed a lack of interest in attending meetings at the school. Despite obtaining prior approval from all four school principals, only four parents attended YouMe School, necessitating a change in approach to home visits for the majority of surveys. The snowball technique was employed to boost participation, wherein the initially surveyed parents were asked to provide other potential parents' names and contact information. While this method effectively expanded the data pool, it faced obstacles such as some parents' reluctance to share contacts or unavailability for home visits.

2.1 Data Collection and Recording

A team of five enumerators underwent a comprehensive one-day training session covering study procedures. Although the research was initially scheduled to be conducted within the school premises, it was ultimately carried out in residential houses based on parents' preferences.

Before conducting the survey, the study's purpose and objectives were communicated to participating parents or guardians. Verbal consent was obtained from parents, and they were informed of their right to withdraw from the survey at any point. It is crucial to note that participants were not subjected to time constraints while responding to the study questionnaire. Enumerators were crucial in clarifying confusion and ensuring accurate and informed responses.

Following data collection, one team member was responsible for data entry, while another reviewed the entered data to ensure accuracy. During the analysis phase, measures were implemented to anonymize the data, safeguard the privacy of participating parents, and maintain the integrity of the collected information.

The questionnaire was based on the Food and Agriculture Organization (FAO) Guidelines for assessing nutrition-related KAP. (Note 5)

2.2 Statistical Analyses

RStudio was employed for all statistical analyses, considering statistical p-values less than 0.05 statistically significant.

For non-normally distributed data, median scores were presented. The proportions or frequencies between groups were compared using the proportion z-test. The Kruskal-Wallis test was utilized for comparing medians in multiple groups, and post-hoc Dunn's test was applied for pairwise comparisons.

Multivariate linear regression models were developed for each outcome variable, incorporating interaction terms of sex and school type. Additionally, parental age and education levels were adjusted in the regression models to account for potential confounding factors.

3. Results

139 parents from four different schools participated in the survey. Parents representing students from Mahendradaya school had significantly higher ages than parents representing other schools (42 vs. 38 vs. 37 vs.

33, $p < 0.01$). The participation of female parents in each school was significantly higher than that of male parents, but the representation of female parents between schools was reasonably equal. Maternal education among Halesi parents was considerably higher than maternal education in other schools. On average, Durchimm School parents had a substantially higher number of children than parents of other schools, and parents of Mahendradaya also had a considerably higher number of children than Halesi and YouMe school parents. Nearly only 1 in 10 parents from Mahendradaya reported they had an adequate supply of drinking water, and this proportion is considerably lower than reported by parents of YouMe and Durchimm schools (Refer to Table 1).

The proportion of parents mentioning toilet facilities available at home was lower in Mahendradaya than in Halesi and Durchimm. YouMe and Halesi school children's parents reported higher scores on knowledge questions than Durchimm school parents. There was no difference in attitude scoring between parents of the four schools. However, YouMe and Halesi school parents had significantly higher practice scores than those of Durchimm and Mahendradaya schools (Refer to Table 1).

Table 1. Distribution of sample characteristics among parents of four schools

	YouMe n= 33 (%)	Durchimm n=32 (%)	Mahendradaya n=56 (%)	Halesi n=18 (%)	p-value
Median age,	38 (32-40) ^a	37 (35-43.5) ^{b,d}	42 (38.8-49) ^{a,b,c}	33 (30.3-35) ^{c,d}	<0.01
Female	26 (78.8)	23 (71.9)	30 (53.6)	13 (72.2)	0.07
Maternal primary education or higher	16 (48.5)	16 (50.0)	18 (34.6)	12 (75.0)	0.04
Paternal primary education or higher	18 (54.5)	17 (54.8)	36 (66.7)	15 (88.2)	0.08
Median number of children	2 (2-3) ^a	4 (3-5) ^{a,b,c}	3 (2-5) ^{b,d}	2 (2-3) ^{c,d}	<0.01
Grow vegetables at home	19 (57.6)	20 (62.5)	27 (48.2)	6 (33.0)	0.19
Adequate supply of drinking water	20 (60.6)	22 (68.8)	7 (12.5)	6 (33.3)	<0.01
Toilet facility at home	7 (21.2)	17 (53.1)	4 (7.1)	10 (62.5)	<0.01
Knowledge score	11.9±2.5 ^a	10.3±1.4 ^{a,b,c}	11.8±2.1 ^b	12.5±2.4 ^c	<0.002
Attitude score	6 (6-6)	6 (5-6)	6 (5-6)	5 (5-6)	0.08
Practice score	14 (12-15) ^{a,b}	10 (7-13.3) ^{a,c,d}	13.5 (11.8-14) ^{b,c,e}	15 (13.3-15) ^{d,e}	<0.01

a,b,c,d,e: The same superscript means they are statistically significant

In the adjusted analysis, it was observed that parents of YouMe school had significantly higher knowledge scores compared to parents of Mahendradaya ($\beta = -1.8$, $p = 0.05$) and Durchimm school ($\beta = -3.3$, $p < 0.01$). Female parents exhibited lower knowledge scores than male parents, and female parents of Halesi and Mahendradaya had higher knowledge scores than male parents of YouMe school. Like the univariate analysis, the adjusted analysis found no factors significantly associated with attitude scores. Additionally, YouMe school parents had higher practice scores ($\beta = -3.8$, $p < 0.01$) than parents of Durchimm school (Refer to Table 2).

Table 2. Adjusted linear regression models for knowledge, attitude, and practice outcome variables

	Knowledge			Attitude			Practice		
	Est.	Std.Er	p	Est.	Std.Er	p	Est.	Std.Er	p
intercept	11.9	1.5	<0.01	5.6	0.4	<0.01	14.6	1.6	<0.01
Mahendradaya	-1.8	0.9	0.05	-0.2	0.2	0.4	-1.4	1.0	0.1
Durchimm	-3.3	1.0	<0.01	0.1	0.3	0.8	-3.8	1.2	0.002
Halesi	-1.6	1.2	0.2	-0.1	0.3	0.8	-0.6	1.4	0.6
Parental age	0.03	0.03	0.3	0.001	0.01	0.9	-0.03	0.03	0.4
Females	-1.7	0.9	0.06	0.1	0.2	0.6	-0.2	1.0	0.8
Education level	0.6	0.4	0.1	0.1	0.1	0.5	-0.2	0.4	0.7
Female*Mahendradaya	2.1	1.0	0.05	0.1	0.3	0.7	0.9	1.2	0.5
Female*Durchimm	2.2	1.2	0.07	-0.2	0.3	0.5	1.5	1.3	0.3
Female*Halesi	3.2	1.4	0.03	-0.4	0.4	0.3	1.6	1.6	0.3

4. Discussion

The subsequent sections will discuss the findings of the study, organized under four primary headings. Additionally, this discourse will illuminate the essential strengths, delineate limitations, and propose recommendations for future research endeavors.

4.1 Gender Disparity in Overall Participation

The study involved 139 parents, 92 mothers, and 47 fathers. Surveys were administered based on availability, and the participation outcomes revealed a lower representation of male parents in the study, potentially linked to migration trends. Khotang, the study area, records the second-highest migration rate among Nepal's 77 districts. (Note 6) According to the Nepal Migration Report in 2022 (Note 7), the number of men migrating for work significantly exceeds that of women, providing a potential explanation for the observed gender disparity in study participation.

This result may be attributed to the influence of a patriarchal society where women are more likely to stay at home (Diwan et al., 2017). The nature of our study, involving home visits, makes it more probable to encounter women in their homes than men. This aligns with societal roles and expectations that might influence the likelihood of finding women at home during the survey.

The study's finding diverges from a nutritional KAP study in Jordan, which reported a fairly equal representation of elderly male and female individuals (Hammouh et al., 2023). Although the contexts and populations in these two studies differ (parents in Nepal vs. elderly individuals in Jordan), the observed gender disparity in representation could suggest various social factors that may have influenced the participation and engagement of females in this study in Nepal. Further analysis is needed to understand the implications of this gender disparity on the study's outcomes and to explore potential socio-cultural factors contributing to this difference.

4.2 Disparity in the Access to Drinking Water and Toilet Facilities

The data on the availability of adequate drinking water and toilet facilities at home reveal significant variations among parents from different schools. This variation is statistically significant, indicating notable differences in access to basic amenities such as clean water and sanitation facilities among parents of the mentioned schools. The challenging water scarcity situation reported by nearly only 1 in 10 parents from Mahendradaya School is considerably lower than that reported by parents of YouMe and Durchimm schools. This challenging water scarcity situation in Mahendradaya School can be attributed to the prolonged water scarcity situation in the Halesi Tuwachung Municipality of Khotang district. (Note 8) The delayed construction of water projects in the area may have exacerbated the problem, leaving the community vulnerable to water shortages. This context helps explain significant differences in access to clean drinking water and toilet facilities among parents, highlighting the urgent need for infrastructure improvements and interventions to address these critical issues in the region.

4.3 Disparities in Knowledge and Practice Scores across the Public and Private Institutions

This research indicates that the nutritional knowledge score of parents from YouMe School (private) was significantly higher than that of parents from Mahendradaya and Durchimm Schools (public). Additionally, parents

from YouMe School (private) had higher nutritional practice scores than parents from Durchimm School (public). This difference in practice scores may be attributed to nutritional screenings and home visits occasionally conducted by private schools, such as YouMe School, in contrast to public/government schools like Shree Durchhim Secondary and Mahendradaya Secondary School. The effects of the school feeding program and the involvement of parents in it also may have contributed to this observed distinction.

The government schools mentioned in the context utilize a cash-based approach for their school feeding initiatives (Shrestha et al., 2020). In contrast, private schools have distinct and specialized nutrition programs. Notably, Halesi Pathshala employs a parent-involved, home-based meal system. These findings align with studies in Sindhupalchok and Bardiya districts in Nepal, where home-grown school feeding improved the school meals program, resulting in better quality and more meals for students (Shrestha et al., 2020).

Furthermore, this setup particularly benefits students who come from remote areas. Another example is YouMe School, which adopts a similar home-based meal strategy. This approach achieves a dual objective: promoting awareness about nutrition and balanced diets among students while conducting yearly nutritional assessments and home visits. These home visits, led by teachers, aim to collect data about nutrition-related aspects and evaluate sanitation conditions. This evaluation involves the educational staff and the parents associated with YouMe School.

The distinctive approaches to school feeding, combined with periodic nutritional screenings, as implemented within private schools, may contribute to the relatively higher levels of nutritional knowledge and practice among parents compared to their counterparts in government schools.

4.4 Gender Disparities in Nutritional Knowledge

The research indicates that female parents had lower nutritional knowledge than male parents. This finding aligns with a study comparing rural and urban perspectives in Nepal. The study revealed that urban and rural moms lacked adequate knowledge about healthy foods, and their nutritional attitudes appeared uninformed (Acharya, 2018). This uncertainty in nutritional KAP among mothers may impact their children's dietary behavior, as numerous studies demonstrate a clear relationship between a mother's level of nutritional knowledge and their children's dietary habits (Oli et al., 2018).

The collective findings highlight the importance of future research endeavors to develop gender-sensitive strategies. These strategies should aim to improve nutritional practices and facilitate the effective implementation of nutrition-oriented initiatives at the national or local level. Such programs must be tailored to address the distinct needs of both women and men within the context of a shared household. This approach ensures a more inclusive and targeted effort toward enhancing overall nutritional knowledge and practices among diverse populations.

5. Strengths

Our study assesses the Nutritional KAP of parents with children enrolled in selected private and public schools (Grades 4 to 6). The detailed presentation of the significant demographic composition of our participants provides a comprehensive analysis of overlooked socio-economic aspects of parental Nutritional KAP. By highlighting these aspects, we also intend to draw the attention of the GoN to consider these factors when implementing national-level nutritional programs for children. This insight can contribute to the development of more targeted and effective interventions that address the specific needs of parents and, consequently, enhance the overall nutritional well-being of children.

6. Limitations

6.1 Cross-sectional Design

The study employs a cross-sectional research methodology, offering data at a specific moment. This design limitation may hinder a comprehensive understanding of the phenomenon being studied, as it focuses on a singular time point.

6.2 Accessibility Issues

Accessibility issues, particularly for distant parents, might have influenced participation rates, potentially introducing a bias in the sample.

6.3 The interconnectedness of Factors

In line with common practice in KAP analysis research, our study did not evaluate the individual connections between the assessed nutritional KAP. While providing insights into their interrelated nature, a more detailed independent examination of each factor could offer additional distinct perspectives.

7. Recommendations

7.1 Longitudinal Studies

Future research could consider adopting longitudinal study designs to overcome the limitations of cross-sectional methodologies. This approach would allow for a more dynamic and in-depth exploration of parental Nutritional KAP over time.

7.2 Addressing Accessibility

Efforts to enhance participation rates, especially for distant parents, should be considered. Implementing remote participation options or community-based approaches might help mitigate accessibility challenges.

7.3 Detailed Analysis of Factors

While the study provided insights into the interconnectedness of nutritional KAP, future studies may benefit from a more granular analysis of each factor independently, offering a more subtle understanding of their contributions.

7.4 Qualitative Research

Incorporating qualitative research methods alongside quantitative approaches could provide a richer understanding of the contextual factors influencing parental Nutritional KAP. This could include exploring parents' perceptions, beliefs, and experiences more deeply.

8. Conclusion

Our study conducted a comparative analysis of nutritional KAP among parents of school children in grades four to six in Eastern Nepal. The comparative approach sought to reveal potential differences in nutritional KAP among parents. Furthermore, the study aimed to explore associations between nutritional KAP and the types of schools attended by children. The investigation investigated whether nutritional initiatives from educational institutes targeted at parents influenced their nutrition-related KAP. This comprehensive analysis provides valuable insights into the varying levels of awareness, attitudes, and practices related to nutrition among parents in different educational settings.

The study identified disparities in nutritional KAP among parents based on their children's school types, reflecting the influence of varied economic conditions. Parents with better economic conditions tend to enroll their children in private schools, while those with lower economic conditions opt for public schools. Additionally, gender disparities in nutritional knowledge and practice were observed. To address these disparities, it is recommended that comprehensive nutrition education programs involving mothers and fathers be implemented across private and public schools. Government-sponsored or partnered initiatives could be crucial in promoting gender-sensitive nutrition programs, thereby closing the gender gap in KAP among students and parents. This would ensure equal access to nutrition education and resources for all.

Furthermore, the insights derived from this study may apply to parental nutrition KAP across diverse regions of Nepal to a certain extent. It is suggested that future research endeavors encompass a substantial sample size, ensuring equitable representation of parents. A study with a larger sample size is needed to comprehend this phenomenon and its implications and achieve greater generalizability, thereby providing a more comprehensive understanding of parental nutritional KAP in various contexts.

Additionally, for future research, it is recommended to incorporate assessments of parental nutrition knowledge based on gender. This becomes especially relevant when preparing nutritional policies or national-level nutritional projects from the GoN. Focusing on gender-specific aspects of parental nutrition knowledge can provide targeted insights for developing and implementing effective and inclusive strategies.

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Notes

Note 1. It is one of the districts located in the Eastern part of Nepal.

Note 2. Jhaukhel-Duwakot is one of the oldest settlements, a former village development committee that is now part of Changunarayan Municipality in Province No. 3 of central Nepal.

Note 3. Joint Action Plan of Nepal (2014). The details about Joint Action Plan (2071/72 – 2076/77 BS)

School Health and Nutrition can be found here: https://km.mohp.gov.np/sites/default/files/2018-07/5%20SHNP_Joint%20Action%20Plan_2071-72%20to%20076-77_English.pdf

Note 4. The details can be found here: <https://microdata.worldbank.org/index.php/catalog/5910>

Note 5. FAO Guidelines for assessing nutrition-related Knowledge, Attitudes, and Practices, 2014 can be accessed here: <https://www.fao.org/3/i3545e/i3545e.pdf>

Note 6. Context News (2023). Migrate to survive: Water woes clear out Villages in Hilly Nepal <https://www.context.news/climate-risks/migrate-to-survive-water-woes-clear-out-villages-in-hilly-nepal>

Note 7. It can be accessed from https://moless.gov.np/storage/files/post_files/Nepal%20Labour%20Migration%20Report_2022.pdf

Note 8. See The Kathmandu Post (2020) for details: <https://tkpo.st/2FMrWGg> A similar news was published in The Rising Nepal Online (2023): <https://risingnepaldaily.com/news/24538>

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Authors contributions

Dinesh Prasad Joshi Ratala and Sharad Chandra Rai, acting as chief researchers, played vital roles in the overall conceptualization, design, editing, and technical support of this research. Pratisha Joshi and Aanchal Shrestha, engaged as research assistants, diligently followed the instructions of the primary researchers. Dr. Mahesh Sarki assumed primary responsibility for data analysis. All authors thoroughly reviewed and approved the final manuscript, underscoring their collective contributions to the study.

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Data sharing statement

No additional data are available.

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