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Oral health knowledge and practices in the Kaski District of Nepal

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Introduction: Oral disease is a widespread problem in Nepal. However, up-to-date information on oral health is limited and oral health initiatives may be shaped by assumptions about insufficient oral health knowledge. Furthermore, the influence of socio-demographic factors on oral health in Nepal remains unclear. This study aims to explore the relationship between demographic background and oral health knowledge, attitudes and behaviors in rural Nepal. ***Methods***: Secondary analysis of data from a community-based survey on oral health knowledge, beliefs, practices, and access to care among residents ages 12 and above across 4 rural villages in Nepal's Kaski District (Total number = 3,243). Chi-square tests were performed to examine associations among oral health knowledge, attitudes and behaviors and demographic characteristics. ***Results***: Participants reported a baseline knowledge of oral health; 92.4% knew about the recommended tooth-brushing regimen. Participants with higher education and younger age demonstrated better oral health knowledge. Misconceptions about dental treatment causing blindness (23.1%), deafness (11.6%), and mental health problems (14.9%) were reported across all groups. ***Conclusion***: Numerous factors besides knowledge likely determine individual oral health behavior. Future interventions should consider community-based outreach programs and dental care delivery through community Health Posts to build trust in dental care, build on existing knowledge and community experiences, and improve access to preventative care. Up-to-date understanding of oral health knowledge and practices and sociocultural influences on oral health behavior will better focus interventions and policy decisions.

Keywords*: Health behavior, oral health, health literacy, inequality, Nepal, Social Determinants of Health*

Introduction

Globally, most oral disease remains untreated, despite affecting 3.5 billion people as of 2015 (Kassebaum *et al.,* 2017). Overall population growth, increased life expectancy and limited access to dental treatment contribute to the persistence of untreated oral disease (Kassebaum *et al.,* 2017), which is associated with several conditions including abscess, mouth pain, periodontal inflammation, and tooth loss (Bagramian *et al*., 2009), and also economic losses and other chronic diseases such as diabetes (Kassebaum *et al*., 2017; Poudel *et al*., 2018).

Available data from Nepal suggest that oral disease is a widespread problem. Dental examinations of 5-6 year old children revealed a caries prevalence from 52% to 69%, with high rates of oral pain (Subedi *et al*., 2011; Dixit *et al*., 2013). The prevalence of caries among children appears to be increasing (Karki *et al*., 2018a, 2018b), and correlates to negative impacts on Oral-Health-Related Quality-of-Life (Karki *et al*., 2018a). As of 2013, self-reported dental caries and tooth pain in adults were highly prevalent (Department of Health Services, 2014; Aryal *et al*., 2014), however, up-to-date oral health data among Nepali adults is limited.

Although there is an Oral Health Unit in the Ministry of Health (Ministry of Health, 2017), Nepal lacks a public health system for population-wide management of oral diseases (Government of Nepal, 2017). Activities of the Oral Health Unit in the 2015-16 year consisted only of "basic oral health" training for health workers and teachers (Ministry of Health, 2017). In general, oral health initiatives in underserved areas of Nepal appear to be ad-hoc, volunteer-based, and provide two main services: dental extractions and oral health education, often with distribution of toothbrushes and toothpaste. Transient health-delivery services in developing countries are rarely aligned with local needs and may be driven by misguided assumptions that poor oral health persists because of inadequate knowledge of oral hygiene (Arefi *et al*., 2020; Lubon *et al*., 2018). Many ad-hoc health interventions currently focus on promoting oral health knowledge and distributing toothbrushing products, despite recent data showing high rates of daily toothbrushing among Nepali schoolchildren (Karki *et al*., 2018a). This discrepancy points towards the need for assessing current oral health knowledge, beliefs and practices in underserved, rural communities in Nepal.

Furthermore, a growing body of evidence suggests that knowledge is not the only factor determining health behavior and outcomes (Singh *et al*., 2018; Spero & Diamond, 2016; Tsang *et al*., 2019). Health behavior and outcomes are increasingly recognized to be determined in large part by systemic inequities in access to resources and power, or "social determinants of health" (Marmot,

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2005; Watt, 2012). Oral health is associated with socio-demographic conditions such as education and income (Karki *et al*., 2018b; Singh *et al*., 2018; Tiwari *et al*., 2017), and as the fourth most expensive condition to treat, early intervention and restorative care are especially inaccessible for low-income populations (Bernabé *et al*., 2017; Petersen *et al.*, 2005). Lack of access to products and services, including early intervention, can obstruct the ability to act on health knowledge (Watt, 2012; Singh *et al*., 2018). Particularly in environments of economic difficulty, pressing daily survival concerns may outweigh the perceived importance of acting on health knowledge, even when such knowledge exists (Tynan *et al*., 2020).

Where oral disease is common, a sense of fatalism around the inevitability of oral disease may cause a gap between knowledge and practice (Öcek *et al*., 2020). Similarly, "resilience," or effective adaptation to adversity associated with oral disease, may impact how and whether oral health knowledge is applied to improve one's quality of life (Karki *et al*., 2018a). Specific gaps in knowledge may be unrecognized; for example, individuals who do practice daily toothbrushing may be using non-fluoridated toothpaste or other substandard materials that are typically considered necessary for effective disease prevention (Khanduri *et al*., 2018).

Finally, many Nepali children consume high amounts of sugary food (Karki *et al.*, 2018a, 2018b), which appears to be a recent evolution in Nepal's food environment (Subedi *et al.*, 2017). In a scenario where a 'nutrition transition' has occurred (Moynihan, 2005), exposure to fluoride during daily toothbrushing will only reduce rather than eliminate the impact of increased exposure to sugar in processed foods (Bernabé *et al*., 2016).

These issues raise questions as to why, in the presence of multiple possible explanations for poor oral health, many interventions in Nepal continue to focus primarily on increasing oral health knowledge.

Kaski District is in the Western region of Nepal with a population of 492,098 people across 125,459 households (National Planning Commission Secretariat, 2012). Villages in the Kaski district are rural and generally 15 - 36 km from the city of Pokhara, where there are many private hospitals and a regional hospital with a dental ward. Without robust data, it remains unclear whether poor oral health in rural Nepal is the result of inadequate oral health knowledge, or other factors that limit how individuals apply their oral health knowledge in practice. To discern the proportional focus that oral health programs should spend on health education, product distribution, and accessibility of treatment services, this study explores the relationship between demographic background and oral health knowledge, beliefs, and practices in Nepal's Kaski District.

Methods

Study design and population

This is a secondary analysis of de-identified data, from a survey of oral health knowledge, beliefs, practices, and access to dental care. The original survey was conducted for program evaluation purposes by a local nonprofit organization and included residents ages 12 and above from 4 rural villages in Nepal's Kaski District. One participant per household was interviewed at any home where the participant gave informed consent or assent, resided in Kaski District and was physically present at home at the time of interview.

Ethics and Consent to Participate

This study was confirmed as Not Human Subjects Research by the Institutional Review Board of University of California Berkeley. The study also qualified as Not Human Subjects Research according to guidelines of the Institutional Review Board of Harvard Faculty of Medicine.

The original survey was conducted by a third party in Nepal, before data deidentification. Informed consent was obtained from adult participants aged 18 and above, while assent was obtained from adolescent participants, as is standard for a program evaluation. A plain language statement was read to participants to explain the purpose and scope of the survey and to offer the opportunity to refuse participation. All participants who were able to write signed informed consent and participants unable to write gave verbal consent to have interviewers write their names for them.

Data collection and analysis

The dataset was generated by a door-to-door survey by Vision Nepal Kaski, a non-government organization providing oral health care in Nepal, between December 2014 and January 2015, with assistance from Eva Nepal (now Jevaia Foundation), a nonprofit organization registered in the United States. Nonprobability household sampling was used. The purpose of the questionnaire was to form the basis of a program evaluation and items were based both on program needs and established oral health surveys (World Health Organization, 2013). The survey consisted of 24 questions pertaining to oral health information and demographic background. The full survey is available in the Supplementary Materials (https://tinyurl.com/JevaiaSurvey). It was not designed for predictive modeling or psychometric testing, and no statistical validation or calibration was performed.

Twenty high school interviewers were recruited from each village and given two days of training in collaboration with local public health professionals. The training schedule included survey protocols and rules, question-by-question review of the survey, role-play and practice surveys. Interviewers were paid the equivalent of $0.10 USD per survey completed, and interview fieldwork was supervised by public health professionals during data collection. The survey was developed in English and translated into Nepali by a bilingual native Nepali speaker. Surveys were verbally administered to all participants to address literacy barriers. Survey data were translated to English and manually entered by paid college students into SurveyGizmo™, an online survey platform.

De-identified data were analyzed using STATA® software (StataCorp. 2017. Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC). The demographic background of participants was categorized by age, education, gender, and residence by Village Development Committee (VDC), the former system to organize what is closely equivalent to current Ward divisions in Nepal. VDCs (or present-day Wards) are referred to here as

"villages." The villages were Salyan, Rupakot, Sardikhola, and Puranchaur respectively. Salyan has the longest travel time to an urban center while Puranchaur has the shortest.

Age was grouped into 4 categories: 12 to 19, 20 - 39, 40 - 59, and 60 and above years. Education level was stratified into illiterate, literate (defined as having not completed primary level education), primary, secondary, and higher level (bachelor's or master's). Participants with missing demographic data were excluded from the analysis (<1%). Some options from the survey responses, such as "No answer", "No", or "Other", were omitted from Table 2 to improve conciseness.

Spearman's correlation coefficient was used to examine the correlation between education and age. Chi-square tests were used to analyze differences in proportions among demographic groups, oral health knowledge indicators, behavior, self-reported condition, and treatment access. Significance was established at $\alpha < 0.05$ for all analyses.

Results

The study included 3,243 participants across the four villages. Participants' ages ranged from 12 to 98 years, with approximately 70% aged 20-59 years. Proportionately more participants were female (63.5%). There was a wide range of education levels, with nearly half of participants having 'secondary education'. Education level was inversely associated with age ($p < 0.001$), and nearly half of elders age 60 and over were illiterate (Table 1).

Overall, participants demonstrated basic knowledge about oral health (Table 2). Most knew it is recommended to brush teeth daily (92.4%), while one-third knew about two or more cariogenic habits (e.g., eating sweets and not brushing teeth) (39.2%). Over half also knew that some oral diseases exist without pain (58.7%) and how tooth pain is caused (59.5%). However, most participants were not familiar with fluoride (77.6%). Furthermore, only a quarter knew two or more types of dental treatment (25.7%). Misconceptions about dental treatment were common, including beliefs that it caused blindness (23.1%), deafness (11.6%), and mental health problems (14.9%). One-half believed that they should visit the dental clinic only for pain or dental problems (50.2%). Participants reported oral hygiene practices consistent with their knowledge, with most brushing at least once a day (87.6%) with a toothbrush (97.4%). Most participants stated that toothpaste is available in the shop nearby their village (69.6%). One-third (32.9%) reported an oral health problem or mouth pain in the past 12 months. Most (87.5%) reported seeking help when they experienced an oral health problem, and over one-third sought care from a health professional at a clinic or hospital (39.8%) or the local health post (36.1%). One-half of participants reported that they could find dental treatment in their local health post.

Oral health knowledge, beliefs, practices were associated with educational status and age (Table 2). Better educated and younger participants were more likely to know about fluoride, optimal tooth brushing recommendations, behavioral causes of oral diseases, causes of dental pain, that oral diseases occur without pain, and types of dental treatments. They were also more likely to believe that dental checkups are recommended even in the absence of pain. In contrast, less educated and older participants were more likely to seek care only if they were in pain. Notably, participants across educational levels and age groups had similar misconceptions about diseases caused by dental treatment (e.g. blindness, etc.), with older adults more likely to fear blindness. Finally, better educated and younger participants were less likely to report a current dental problem, more likely to seek help for the problem, more likely to seek help from a clinic or hospital, and less likely to seek help from family members/household remedies. Overall, results across VDCs were generally consistent; however, proximity to an urban center was loosely associated with likelihood of seeking dental care from hospitals. Analysis of oral health trends across VDCs is available upon request.

Table 1. Demographic characteristics of 3,243 participants across the four villages

	Education Level					
	Illiterate (n = 533) %	*Literate (n = 655) %*	*Primary (n = 410) %*	*Secondary (n = 1475) %*	*Higher (n = 170) %*	*Total (n = 3243) %*
Age						
12 - 19	2.0	1.5	6.1	83.5	6.9	12.6
20 - 39	3.9	10.8	15.1	60.8	9.4	40.8
40 - 59	22.0	34.2	14.1	28.2	1.5	29.5
60 +	47.1	32.2	9.0	11.0	0.7	17.1
Gender						
Female	19.2	22.0	12.4	42.2	4.2	63.5
Male	11.6	17.1	13.1	51.2	7.0	36.5
VDC						
Salyan	20.7	16.1	13.5	45.6	4.1	30.3
Rupakot	13.4	35.0	14.7	34.2	2.7	19.7
Sardikhola	13.2	20.4	13.3	49.8	3.3	24.5
Puranchaur	16.7	13.5	9.3	50.0	10.5	25.5

P-value <0.001; chi squared test for differences among groups within the same row

Table 2. Education & Age vs. Oral health knowledge, behavior & self-reported status among 3,243 participants¶

		Education Level					*Age Category*				
		Illiterate n = 533	*Literate n = 656*	*Primary n = 410*	*Secondary n = 1,475*	*Higher n = 170*	*60 + n = 407*	*40 - 59 n = 1,323*	*20 - 29 n = 957*	*12 - 19 n = 557*	*Total n = 3,243*
1	Reports that they have a tooth brushing habit*†	84.2	93.7	96.1	98.9	100.0	84.7	94.8	98.6	99.0	95.2
2	If yes (1), uses a toothbrush (n = 3,081)*†	90.2	97.1	98.7	99.3	98.8	91.1	97.7	99.2	98.8	97.4
3	Brushes teeth once a day or more*†	57.6	84.8	89.8	97.8	98.8	65.5	83.7	96.4	98.5	87.6
4	States one should brush teeth once a day or more*†	72.6	91.9	95.9	98.1	98.8	78.6	91.0	97.6	97.8	92.4
5	States that they don't know where to buy fluoridated toothpaste*†	10.5	4.0	2.7	0.9	0.6	9.5	3.7	0.8	2.5	3.3
6	States that they can buy fluoridated toothpaste in their village*†	59.5	75.1	74.6	69.9	64.7	57.4	72.7	72.8	68.3	69.6
7	Reports two or more types of oral diseases*††	23.3	33.7	30.0	33.2	34.7	25.9	32.9	33.1	29.2	31.3
8	Reports two or more personal habits that may cause oral diseases*†	26.1	40.9	35.4	43.1	50.0	30.9	40.3	42.0	39.3	39.3
9	States it is possible to have oral diseases with no pain*†	44.5	53.7	54.9	64.5	81.8	50.5	56.8	62.7	61.2	58.7
10	States tooth pain is caused by decay reaching the inside of the tooth*†	44.8	51.5	55.9	67.0	79.4	49.6	53.0	66.4	65.6	59.5
11	Reports two or more types of dental treatments*†	9.9	20.8	24.9	31.1	50.0	14.9	23.8	30.5	29.5	25.7
12-1	Reports blindness as a risk associated with dental treatment**††	21.0	27.9	23.2	22.0	20.6	22.8	27.3	21.5	18.9	23.1
12-2	Reports deafness as a risk associated with dental treatment	9.8	13.3	11.2	11.6	11.2	12.4	10.8	11.6	12.3	11.6
12-3	Reports mental problems as a risk associated with dental treatment**	11.3	12.5	17.6	16.8	12.9	13.3	13.7	16.3	15.7	14.9
13-1	Reports mouth should be checked at the clinic only when it hurts or when there is some kind of problem*†	63.0	57.1	58.8	42.9	25.9	60.6	55.4	45.3	39.8	50.2
13-2	Reports mouth should be checked at the clinic at least once per year*†	16.3	29.0	29.5	47.7	61.8	21.8	32.5	43.6	48.4	37.2
14	Reports oral health problem or pain in the last 12 months**††	38.3	35.7	32.0	30.5	28.8	39.2	33.1	32.3	26.0	32.9
15	If yes (14), sought help for the problem (n = 1,065)**†	81.4	89.7	86.3	88.9	93.9	82.5	89.2	89.0	86.8	87.5
16-1	If yes (15), sought help from traditional healer (n = 932)*	5.4	2.9	4.4	2.8	0.0	2.2	4.6	3.4	1.1	3.3
16-2	If yes (15), sought help from family/household remedies (n = 932)*††	31.9	19.7	18.6	14.5	6.5	26.8	21.3	14.8	13.0	18.9
16-3	If yes (15), sought help from local health post (n = 932)*††	37.3	38.0	30.1	36.6	32.6	27.4	37.6	38.8	37.0	36.1
16-4	If yes (15), sought help from other clinics or hospitals (n = 932)*††	21.1	37.5	44.2	45.1	60.9	39.7	34.8	42.0	46.7	39.8

¶ Chi-squared tests for differences among groups within the same row.
* For Education, P-value <0.001
** For Education, P-value <0.05
† For Age Category, P-value <0.001
†† For Age Category, P-value <0.05

Discussion

This study was a preliminary investigation of current oral health knowledge, practice and behaviours among adolescents and adults in rural Nepal. Participants had high levels of general knowledge about daily tooth brushing and about some causes of dental caries, such as consumption of sweets. Most reported daily toothbrushing and nearby access to dental hygiene products. These results align with similar findings among school-age children in Nepal (Karki *et al*., 2018a, 2018b). Overall, there was less knowledge about the multiple causes of tooth decay, the existence of fluoride, signs of oral disease other than pain, and types of conventional dental treatments. There was also a noticeable mistrust of dental care, with beliefs that it might lead to deafness, mental problems or blindness.

These results suggest that the major drivers of oral disease in the regions surveyed are neither low awareness of proper oral hygiene practices, nor lack of access to oral hygiene products. That nine out of ten participants reported brushing their teeth "once a day or more" either suggests high levels of toothbrushing, or reflects social desirability bias, which itself points to a social norm around tooth brushing. In either case, basic knowledge about oral hygiene was found to be widely present, challenging a pervasive narrative that understanding of daily oral hygiene practice is low in rural Nepal. Rather, specific gaps in knowledge around fluoride use, disease presentation and available treatments appear more common.

While reported levels of tooth brushing were high, many questions remain around other drivers of oral disease. The quality of available toothpastes and the specific dietary risk profiles of participants with respect to oral disease is unknown. While 39.3% recognized two or more risk factors for tooth decay, including consuming sweets, actual consumption of sugary foods was not measured. Although knowledge about toothbrushing exists, a recent national survey found that tooth brushing among Nepali children commonly occurs just once daily (Karki *et al*., 2018b), which may be inadequate to mitigate environmental risk factors among some or all age groups in Nepal. Finally, limited access to common preventative care such as fluoride treatment and sealants may also limit the benefits of daily toothbrushing in the context of environmental drivers of oral disease.

Education level and age were associated with several oral health knowledge indicators and care-seeking practices, and distance from an urban center was loosely correlated with likelihood of seeking treatment at a hospital. Among older adults, where education level was lower, attainment of oral health knowledge and practice may be mediated by access to formal education. Older and less educated participants were less aware of fluoridated toothpaste, conventional modern dental treatments, and the possibility of oral disease in the absence of pain. They were more likely to fear blindness as a misconceived risk of dental treatment, and to rely on home remedies to treat oral health problems. Therefore, older adults likely have unique needs around oral disease prevention and oral health education.

Although many participants knew it is possible to have oral disease with no pain, half of all participants and two-thirds of older adults would only seek care in the presence of pain. Treatment-seeking among those who had experienced pain or problems in the last year was very high, yet despite some knowledge about the diverse symptoms of oral disease, it seems many people wait until they are symptomatic before accessing care.

Additionally, the high proportion of people who appear to associate dental care mainly with pain relief may be partly explained by the limited availability of other interventions. Approximately one-third of participants in all demographic groups who sought care for dental problems or pain reported visiting the Health Post, and over half said that they could find dental care there. Indeed, the year the present data were collected, 9578 people in Kaski District were diagnosed with dental caries and 3997 with toothache in Health Posts (Ministry of Health, 2017). Yet the only options for managing these conditions in Health Posts are antibiotics and analgesics; Nepal's national Health Post system does not offer either surgical management of oral disease or non-invasive preventative treatments such as fluoride and sealants (Ministry of Health, 2017). Therefore, it is logical that many rural residents equate pharmaceutical pain relief with dental care and are less familiar with preventative and restorative dental medicine.

Distance from an urban center also appeared to mediate some dental-care seeking. Among the two-thirds of participants who did not report using the village Health Post for dental treatment, participants who were older, had less education, and lived in the village farthest from the city tended to use home remedies. Participants who were younger, had more education, and lived in the village closest to the city were more likely to seek dental care in the urban hospital.

In concordance with a global shift toward recognizing social determinants of health (Watt, 2012; Marmot, 2005), these data support the idea that oral health interventions in Nepal should account for numerous environmental, social and economic conditions that contribute to oral disease. Even with high levels of knowledge about oral hygiene practices, and access to dental hygiene products, residents in rural Nepal face a fast-changing nutritional environment (Subedi *et al.*, 2017) and a myriad of constraints on accessing preventative and early interventive care. A deeper understanding of these environmental influences is essential to inform the design of effective primary care oral health care services in Nepal.

Future research might focus on conditions besides individual knowledge that determine oral health status, such as water availability, road access, food access and exposure, work conditions, economic obstacles, cultural norms around gender, or age-related mediators such as mobility, literacy and independence. Given the many demands of everyday life in rural communities in Nepal, information about oral hygiene simply may not establish oral health behaviours as a priority in practice.

Individualised approaches that seek only to increase oral health knowledge will likely be inadequate to address oral health needs in rural Nepal, particularly if they are narrowly focused on the importance of tooth-brushing. However, there does appear to be a need for awareness-raising activities that specifically address: use of fluoridated toothpaste, painless presentations of oral disease, myths

about risks of blindness, deafness or cognitive problems in association with dental treatment, and information about restorative, surgical, and non-invasive treatment options such as topical fluorides (Marinho, 2009; Seifo *et al*., 2019) and the Basic Package of Oral Care (Frencken *et al*., 2002). Additionally, community discussion and group problem-solving approaches that foster conversation about obstacles to adopting healthy oral health practices, and are attuned to local needs and experiences, may be more effective than didactic approaches based on an assumption of low oral health knowledge.

Age appears to be a particularly important consideration in design of oral health interventions in Nepal. Delivery of health information and services should consider that a high percentage of older adults in Nepal have received minimal or no formal education and may have unique oral health needs. More nuanced understanding is required of how those in the older demographic make decisions about their oral health practices, as well as how the elderly are specifically impacted by environmental forces. Further research might explore unique factors associated with oral health experiences of older adults in Nepal, including illiteracy, geographic and physical obstacles to accessing care or implementing oral hygiene practices, common comorbidities, and the impact of tooth loss on consuming the relatively soft traditional Nepali diet of rice, lentils and cooked vegetables.

Although Health Posts were perceived as the primary point of care for most participants, dental care in Nepal remains largely limited to urban, hospital-based settings. These data suggest Health Posts are ideally positioned as an entry point into the care pathway, both because residents already access Health Posts regularly, and because a diversity of possible treatment options can be provided on-site and recommended through referral. For example, rural Health Posts might explore systematic delivery of topical fluorides (Marinho, 2009; Seifo *et al.,* 2019) and the Basic Package of Oral Care (Frencken *et al.*, 2002; World Health Organization, 2019), which is designed for allied health professionals to deliver in limited-resource settings. If a wider variety of preventative and early-interventive care was available in primary care Health Posts, exposure to such services might also increase general understanding of non-pharmaceutical dental care and help to dispel mistrust of dentistry.

Finally, it has been argued that failure to recognise the impact of the structural determinants of chronic and preventable oral disease is paramount to an ethical failure on behalf of the profession (Watt, 2012). But many social and structural issues cannot be broadly addressed by clinicians in a clinical setting. Community-based efforts such as school-based oral health care and discussion-focused outreach programs may be best addressed by oral health providers who consistently spend time in community spaces, schools and other inter-professional contexts to combat social and environmental drivers of oral disease.

The strengths of this study include a large sample size, inclusion of more than one geographic region within the Kaski District, and a comprehensive set of exploratory questions. However, the study was limited to secondary analysis of a data set that was generated for an internal program evaluation. The original survey was not a validated instrument. Interviewers had minimal prior experience and there was no quantitative validation of inter-interviewer reliability, which may have affected the quality of data that were generated. Convenience sampling was used and there is no measure of the representativeness of participants, either to the general population in the surveyed regions, or the broader Nepali population. Generalizability of findings is therefore limited. However, it is also notable that responses included one participant from over 90% of households in all four villages, making the present dataset a sound starting point for informing future investigation (National Planning Commission Secretariat, 2012).

Conclusions

These data support the idea that many factors in addition to oral health knowledge determine individual health status. Four rural villages exhibited high ambient knowledge about oral hygiene practice and where to find dental hygiene products. Interventions focusing mainly on information about toothbrushing and free product distribution may therefore lack attunement to local needs and conditions. Oral health knowledge and practices were generally more favourable among younger and more educated community members, and results raised new considerations around the needs of older adults in Nepal. Health Posts were widely perceived across all demographic groups as a primary resource for oral health care, and therefore appear well-positioned to influence oral health practices and outcomes across all demographic groups in rural areas.

Designing effective oral health interventions in rural Nepal calls for an up-to-date understanding of oral health knowledge and practices in the region, and attention to social and environmental influences that impact how Nepali people perceive their options and prioritize decisions about their oral health care.

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Data material and Availability

Data can be made available upon reasonable request in writing to the corresponding author.

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