Lived Experiences and Mathematical Patterns of Quid Chewers in Lanao del Sur: A Qualitative Study

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ABSTRACT

This study investigated the socio-demographic profiles, lived experiences, and implicit mathematical concepts of quid chewers in four municipalities of Lanao del Sur, Philippines: Binidayan, Bayang, Tubaran, and Lumbatan. Using a qualitative descriptive design, data were collected from 20 purposively selected participants through semi-structured interviews. The findings revealed that quid chewers represented diverse socio-demographic backgrounds in terms of sex, marital status, educational attainment, and occupation. Lived experiences highlighted initiation practices, habitual chewing patterns, physical and sensory effects, psychological impacts, and reflections on social and cultural contexts. Participants reported both immediate physiological responses and long-term dependence, while social interactions and cultural traditions shaped their motivations and persistence. Analysis of daily practices demonstrated that chewers employed implicit mathematical concepts, including estimation of consumption, rationing of quid portions, and timing of chewing episodes to regulate intake.

Keyword: quid chewing, areca nut, socio-demographic profiles, lived experiences, mathematical reasoning, cultural practices

INTRODUCTION

Quid chewing, particularly betel quid or areca nut chewing, is a longstanding cultural practice that continues in rural and indigenous communities in the Philippines. The practice involves chewing a mixture of areca nut, slaked lime, and occasionally other ingredients such as betel leaf or tobacco. Although betel quid chewing has been widely studied in South and Southeast Asia, research in the Philippine context is limited. In the Philippines, betel quid, locally referred to as *buyo*, *nga-nga*, or *momma*, has historically served as both a stimulant and a social and cultural marker embedded in community life, rituals, and intergenerational practices (Abdurajak, Halili, & Al-Zamzam, 2019; Ladera, 2016; Mangali, 2023; Romero et al., 2026).

The socio-cultural significance of quid chewing extends beyond individual habit. Ethnographic studies indicate that the practice often begins through familial and peer influence, with initiation occurring during adolescence or early adulthood. Chewers report that the activity facilitates social bonding, provides a sense of belonging, and maintains cultural continuity in agricultural and highland communities (Ladera, 2016; Mangali, 2023). These findings demonstrate that community norms and cultural identity strongly shape chewing behaviors and sustain traditional practices despite modernization and growing public health awareness.

Socio-demographic factors influence the prevalence and intensity of betel quid use. Local studies reveal that habitual chewers are predominantly older adults engaged in farming or other manual occupations, and their educational attainment tends to be lower. Chewing frequency is often shaped by economic and social

circumstances, indicating that cultural tradition, occupational routine, and socio-economic status intersect in the continuation of quid chewing (Abdurajak et al., 2019; Romero et al., 2026).

Health research consistently highlights the risks associated with chronic betel quid use. Areca nut contains psychoactive alkaloids, particularly arecoline, which produce mild euphoria and increased alertness. Prolonged chewing, however, is associated with oral submucous fibrosis, dental damage, and elevated risks of oral and pharyngeal cancers (Aula Jasim et al., 2024; Warnakulasuriya & Chen, 2022). Philippine studies examining buccal cell micronuclei among habitual chewers show significant genetic damage compared with non-chewers, confirming the biological impact of prolonged use (Abdurajak et al., 2019). These findings highlight the importance of understanding chewing practices both culturally and in terms of public health risk.

In addition to physiological effects, quid chewing involves psychological and cognitive dimensions. Habitual chewers often demonstrate tolerance and dependence, while also employing informal quantitative reasoning in daily practice, such as estimating the number of quids consumed, rationing ingredients, and timing chewing sessions according to social and occupational activities (Mangali, 2023; Romero et al., 2026). These cognitive strategies reflect the integration of practical mathematical reasoning within culturally meaningful routines.

Despite its cultural, social, and health significance, research on quid chewing in the Philippines remains limited, particularly regarding the lived experiences of chewers, the socio-demographic profiles associated with habitual use, and the cognitive strategies embedded in daily practices. Existing studies have primarily focused on health outcomes or descriptive prevalence, leaving a critical gap in understanding the multidimensional nature of this practice (Abdurajak et al., 2019; Ladera, 2016; Romero et al., 2026).

This study addresses this gap by investigating the socio-demographic profiles of betel quid chewers in the Philippines, their lived experiences including initiation, patterns of use, sensory and psychological effects, and reflections within social and cultural contexts, as well as the implicit mathematical reasoning applied in daily practices. By situating this inquiry within the Philippine cultural and occupational context, the study aims to provide a holistic understanding of quid chewing that can inform both public health strategies and culturally sensitive interventions.

Research objectives

The purpose of this study is to investigate the practices and experiences of quid chewing among twenty respondents from four municipalities in Lanao del Sur, Philippines, namely Binidayan, Bayang, Tubaran, and Lumbatan. Specifically, the study aims to describe the socio-demographic profiles of quid chewers in terms of sex, marital status, educational attainment, and occupation; explore the lived experiences of quid chewers, including initiation and early experiences, chewing habits and patterns, physical and sensory effects, psychological and dependence effects, and reflections within social and cultural contexts; and identify the implicit mathematical concepts applied by quid chewers in their daily practices, including estimation of consumption, rationing, and timing of chewing episodes.

Theoretical Framework

The present study is anchored in the socio-cultural theory of human behavior, which emphasizes the influence of social, cultural, and environmental factors on individual practices (Vygotsky, 1978). This framework asserts that behaviors are not solely personal choices but are shaped and maintained through interactions within cultural and community contexts. In the case of quid chewing, the practice is embedded in Filipino rural and indigenous communities as both a cultural tradition and a social activity. Social norms, family influence, peer interactions, and occupational routines collectively guide the initiation, continuation, and patterns of chewing behavior (Ladera, 2016; Mangali, 2023; Romero et al., 2026).

Additionally, this study draws on the biopsychosocial model, which integrates biological, psychological, and social dimensions to explain health-related behaviors and dependency patterns (Engel, 1977). The model

highlights how physiological effects of areca nut consumption, such as psychoactive stimulation, interact with psychological factors, including craving and habitual reinforcement, and social factors, including peer acceptance and cultural identity, to sustain chewing practices. This perspective allows for a comprehensive examination of both the health implications and the lived experiences of chewers.

Furthermore, the study incorporates aspects of informal mathematical reasoning, recognizing that habitual behaviors often involve practical cognitive processes. Quid chewers routinely estimate the number of quids consumed, ration ingredients, and determine timing to align with social or occupational activities (Mangali, 2023; Romero et al., 2026). These behaviors reflect an applied understanding of numerical and proportional reasoning embedded in daily practice, demonstrating the intersection of cognition, culture, and habit.

By integrating socio-cultural theory, the biopsychosocial model, and applied cognitive reasoning, the theoretical framework provides a holistic lens to explore quid chewing practices. This framework supports an investigation of the socio-demographic profiles of chewers, their lived experiences, and the implicit mathematical reasoning that shapes their daily behaviors, situating individual practices within broader cultural, social, and cognitive contexts.

Conceptual Framework

The conceptual framework for this study provides a comprehensive lens for understanding quid chewing practices among respondents in Lanao del Sur, Philippines. It illustrates how socio-demographic characteristics, lived experiences, and cognitive and behavioral processes interact to shape overall chewing practices and their outcomes.

Socio-demographic characteristics, including sex, marital status, educational attainment, and occupation, establish the contextual background of the respondents' behaviors. These factors influence how and why individuals initiate chewing, the social groups in which chewing occurs, and the access and resources available to maintain the practice.

Lived experiences represent the personal and social dimensions of quid chewing. This includes the initiation and early exposure to the practice, habitual chewing patterns, physical and sensory effects experienced, psychological and dependence effects, and reflections within social and cultural contexts. These experiences capture both the individual and collective aspects of chewing behavior, highlighting how culture and social norms shape the practice.

Cognitive and behavioral processes reflect the practical reasoning embedded in daily chewing routines. This study emphasizes the mathematical concepts implicitly applied by chewers, such as estimating the number of quids consumed, managing consumption to regulate intake, and scheduling chewing sessions to fit daily routines or social interactions. These processes illustrate how chewers actively regulate their behavior using practical reasoning and planning skills.

These components collectively influence overall quid chewing practices and outcomes, including frequency, patterns, cultural significance, and potential health implications. By integrating socio-demographic, experiential, and cognitive dimensions, the framework provides a holistic understanding of quid chewing as a multidimensional practice shaped by individual, social, cultural, and cognitive factors.

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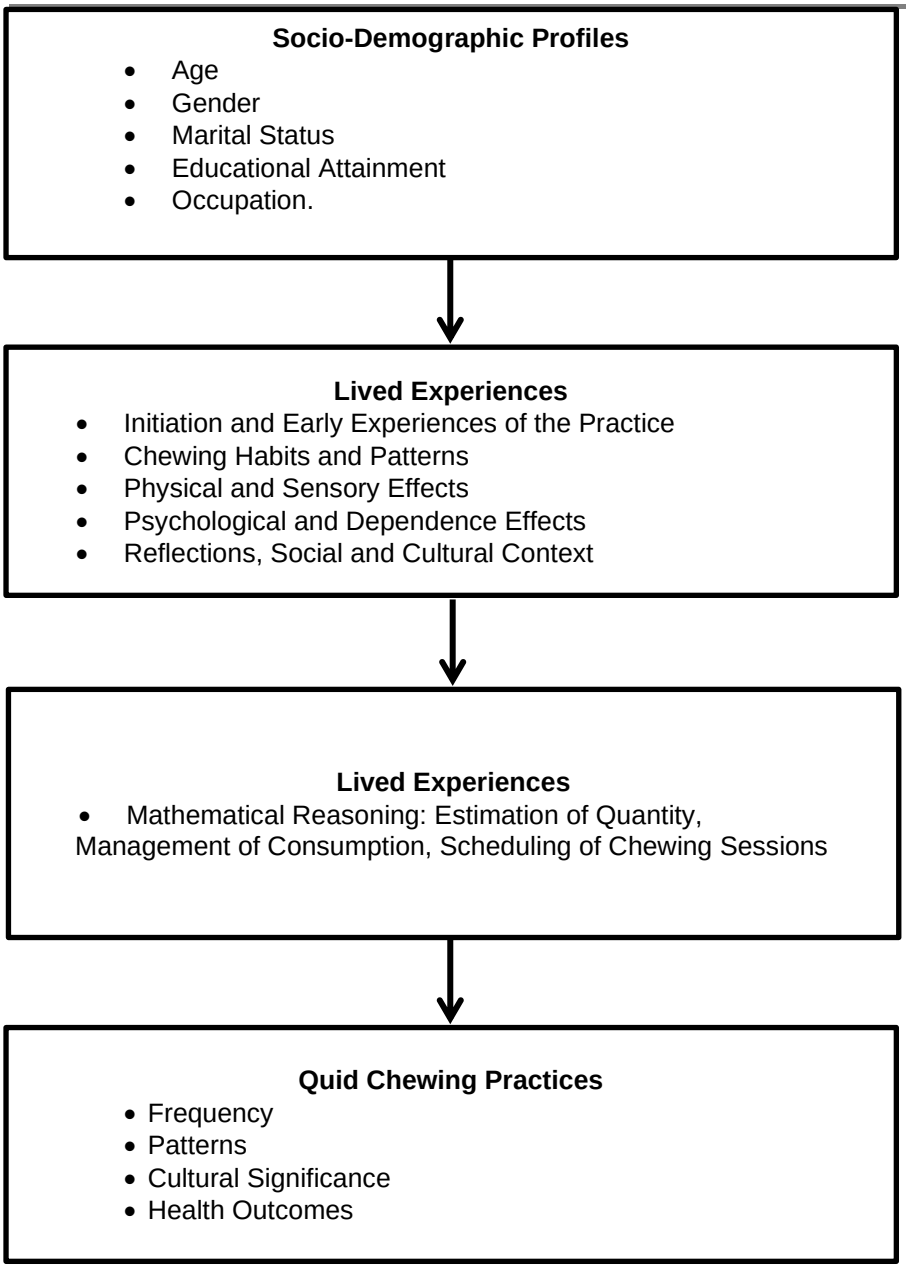

Figure 1. Conceptual Framework

METHODOLOGY

Research Design

This study employed a qualitative research design to explore the lived experiences, behavioral patterns, and personal perceptions of quid chewers in selected municipalities. A qualitative approach was chosen to capture rich, contextualized insights into the initiation, frequency, and patterns of quid chewing as well as its physical, psychological, social, and cultural effects.

The ethno-interview method was used to collect in-depth narrative data directly from participants. This approach allowed the researchers to examine not only quantitative aspects of chewing habits, such as frequency, duration, and quantity, but also the subjective meanings, motivations, and social contexts that influence these behaviors. The study also considered how chewers implicitly applied mathematical reasoning, including counting, estimation, pattern recognition, and proportional adjustment, within their daily routines.

Thematic analysis was applied to systematically identify recurring patterns, behaviors, and cognitive strategies across participants' narratives. This method provided a comprehensive understanding of how individual experiences, social influences, and environmental contexts intersect to shape the practice of quid chewing. The

qualitative framework was particularly suitable for investigating a behavior that is both habitual and socially mediated, allowing the capture of subtle cognitive and cultural nuances that would be difficult to quantify using purely numerical methods (Creswell and Poth, 2018).

Participants

The study was conducted in December 2025 and involved 20 quid chewers from four municipalities in Lanao del Sur, Philippines: Binidayan, Bayang, Tubaran, and Lumbatan. Participants' ages ranged from 20 to over 60 years, encompassing young, middle-aged, and older adults. The sample was predominantly male, though both sexes were represented. Marital status included single, married, and widowed participants, providing diverse social perspectives. Educational attainment ranged from no formal schooling to college graduates, reflecting varying levels of literacy and exposure to formal education. Participants' occupational backgrounds were heterogeneous, including farmers, carpenters, vendors, housewives, teachers, businessmen, barangay officials, and unemployed individuals. This diversity across demographic factors such as age, sex, marital status, education, and occupation enabled a rich exploration of the lived experiences, motivations, and practices associated with quid chewing, capturing both personal and socio-cultural dimensions of the behavior.

Data Gathering

Data for this study were collected through in-depth ethno-interviews conducted with the 20 participants. Interviews were conducted in the participants' local language to ensure clarity and accuracy of responses and were audio-recorded with participants' consent. Each interview lasted approximately 45 to 60 minutes. Follow-up questions and prompts were used to elicit detailed descriptions and examples, allowing participants to articulate their experiences comprehensively. Field notes were also maintained to capture non-verbal cues, environmental context, and researchers' observations, providing additional depth to the qualitative data. All interviews were later transcribed verbatim, and the transcripts were cross-checked for accuracy before thematic analysis was conducted.

Data Analysis

The transcribed interview data were analyzed using thematic analysis to identify patterns, meanings, and insights within participants' lived experiences (Braun & Clarke, 2006). The analysis followed a systematic procedure, beginning with familiarization with the data through repeated readings of the transcripts. Significant statements and phrases related to the initiation of quid chewing, habitual practices, physical and psychological effects, and social and cultural contexts were highlighted and coded.

These initial codes were then organized into broader themes and sub-themes that captured the essence of participants' experiences. Themes were reviewed and refined to ensure clarity, internal consistency, and distinctiveness. Illustrative quotations were selected to accurately represent each theme and provide rich contextual evidence. The analysis emphasized both descriptive and interpretive understanding, allowing the study to explore not only what participants experienced but also how they made sense of those experiences.

All coding, organization, and retrieval of thematic content were conducted manually, with careful cross-checking of transcripts and field notes to ensure accuracy. Peer debriefing was also employed to enhance the credibility, dependability, and trustworthiness of the findings (Creswell & Poth, 2018). This rigorous approach ensured that the study captured the depth, complexity, and contextual relevance of participants' lived experiences.

RESULTS AND DISCUSSION

Results

The Socio-Demographic Profiles of the Respondents

Understanding the socio-demographic profiles of the participants provides essential context for interpreting their lived experiences as quid chewers. The table below presents the distribution of respondents across several key variables, including municipality, age, sex, marital status, educational attainment, and occupation. These profiles

help illuminate patterns in the population studied and provide a foundation for linking demographic factors with the qualitative insights gathered during the ethno-interviews. By examining these characteristics, the study aims to contextualize the participants' experiences and identify potential trends in quid chewing practices across different social and cultural groups.

Table 3.1. Socio-Demographic Profiles of the Respondents

Variable	Category	Frequency (f)	Percentage (%)
Municipality	Binidayan	5	25%
	Bayang	5	25%
	Tubaran	5	25%
	Lumbatan	5	25%
Total		20	100%
Age Group	20–29	3	15%
	30–39	1	5%
	40–49	5	25%
	50–59	5	25%
	60 and above	6	30%
Total		20	100%
Sex	Male	17	85%
	Female	3	15%
Total		20	100%
Marital Status	Single	2	10%
	Married	14	70%
	Widowed	4	20%
Total		20	100%
Educational Attainment	No Schooling	2	10%
	Elementary	3	15%
	High School	5	25%
	Vocational	1	5%
	College Level	5	25%
	College Graduate	2	10%
Total		20	100%
Occupation	Farmer	9	45%
	Carpenter	3	15%
	Vendor	2	10%
	Housewife	2	10%
	Teacher	1	5%
	Businessman	1	5%
	Barangay Official	1	5%
	None	1	5%
TOTAL		20	100%

The study involved 20 respondents, equally distributed among four municipalities, Binidayan (25%), Bayang (25%), Tubaran (25%), and Lumbatan (25%), all located in Lanao del Sur District II. Respondents' ages ranged from 20 to over 60 years, with the largest group being 60 and above (30%), followed by 40–49 (25%) and 50–59 (25%). Younger participants were 20–29 (15%) and 30–39 (5%). Most respondents were male (85%) and married (70%), while widowed participants accounted for 20% and single respondents for 10%. Educational attainment varied, with high school graduates (25%) and college-level participants (25%) representing the largest groups, followed by elementary graduates (15%), no schooling (10%), college graduates (10%), and vocational graduates (5%). Regarding occupation, nearly half were farmers (45%), followed by carpenters (15%), vendors (10%), housewives (10%), and teachers, businessmen, barangay officials, and unemployed individuals at 5% each.

Overall, the typical respondent was a middle-aged to older male, married, with varied education, and engaged in farming or similar occupations. These socio-demographic characteristics provide context for interpreting the lived experiences of quid chewers in the studied communities.

Lived Experiences and Their Themes

This section presents the lived experiences of quid chewers as captured through in-depth ethno-interviews. The respondents' narratives were analyzed and organized into key themes that reflect the multifaceted nature of quid chewing, encompassing personal, social, and cultural dimensions. The experiences were categorized into four main domains: quid chewing initiation and experience, chewing habits and mathematical patterns, physical, sensory, and psychological effects, and social and cultural reflections.

Each domain is further divided into specific sub-themes that highlight critical aspects such as age and social influences, motivations for starting, frequency and quantity of chewing, physical and psychological effects, as well as social interactions and cultural significance. Presenting the respondents' lived experiences within these thematic frameworks provides a comprehensive understanding of how individual behavior, social context, and cultural values intersect in the practice of quid chewing.

Table 3.2. Lived Experiences of Quid Chewers: Themes, Respondent Answers, and Illustrative Quotes

Section	Questions	Themes of Respondents' Answers	Example of Respondents' Answers
A. Quid Chewing Initiation & Experience	1. When did you start chewing quid, and who influenced you to start?	Early Exposure	*"I started when I was 10 years old, influenced by my grandfather." (R5)* *"I began at 12, seeing my older brother do it." (R7)* *"I first tried it when I was 11 because my parents chewed it." (R2)*
		Social Influence	*"I was influenced by my friends and coworkers." (R4)* *"I saw people chewing quid and decided to try it myself." (R16)* *"My peers convinced me to join them." (R12)*
	2. What was your main reason for starting quid chewing?	Functional Motivation	*"I started chewing quid to quit smoking." (R1)* *"It was used as medicine for my toothache." (R12)* *"I wanted something to relieve stress after work." (R9)*
		Social Motivation	*"I wanted to keep up with my friends." (R20)* *"It was part of hanging out with coworkers." (R4)* *"I felt included when I chewed with my peers." (R16)*
	3. How did you feel the first time you chewed quid, and how would you describe your overall experience?	Initial Discomfort	*"The first time I felt dizzy and my ears were hot." (R9)* *"At first it tasted bitter and left my mouth numb." (R6)* *"I felt nauseous and uncomfortable initially." (R3)*

		Gradual Adaptation	*"I got used to it and now it feels good." (R6)* *"Now it helps me relax and pass time." (R20)* *"Over time, it became part of my daily routine and enjoyable." (R10)*
B. Chewing Habits & Patterns	4. How many times a day and how long do you usually keep quid in your mouth each time?	High Frequency	*"More than 10 times a day." (R1)* *"Around 20 times—I can't even count." (R3)* *"I chew almost every hour." (R7)*
		Fixed Duration	*"Usually 10 to 15 minutes each time." (R10)* *"I keep it in for about 20 minutes." (R16)* *"Each session lasts 5–10 minutes." (R12)*
	5. How many pieces of quid do you chew daily, and are there differences on weekdays versus weekends?	Variable Quantity	*"More than 10 pieces a day." (R3)* *"I can't count how many pieces I chew." (R20)* *"I usually chew 8–12 pieces daily." (R6)*
		Routine Stability	*"It's the same every day." (R14)* *"I don't change my pattern on weekends." (R1)* *"My daily intake is consistent regardless of the day." (R9)*
	6. Are there specific situations, times, or stress-related circumstances that change your chewing frequency or duration?	Contextual Triggers	*"I chew after meals and when I'm bored." (R3)* *"I chew while watching TV or chatting." (R14)* *"During free time, I tend to chew more." (R6)*
		Stress-Driven Consumption	*"When I'm stressed, I chew more often." (R20)* *"It helps me think and deal with problems." (R8)* *"I chew extra during work pressure." (R12)*
C. Physical & Sensory Effects	7. What changes have you noticed in your mouth, teeth, or gums since you started chewing quid?	Oral Discoloration	*"My teeth turned red and my gums darkened." (R8)* *"My front teeth are stained from regular chewing." (R3)* *"Gums and teeth color changed gradually over months." (R10)*
		Structural Changes	*"I noticed staining and irritation in my gums." (R9)* *"My gums are receding slightly." (R12)* *"I sometimes feel soreness in my teeth after chewing." (R14)*
		Altered Taste	*"Everything tastes bitter after chewing." (R2)* *"I cannot enjoy sweets like before." (R10)* *"Spicy foods feel more intense now." (R6)*

	8. Have you experienced changes in taste or other unusual sensations in your mouth while or after chewing?	Sensory Response	*"My mouth feels warm and my tongue tingles." (R10)* *"I feel a slight numbness sometimes." (R14)* *"There's a tingling sensation in my gums." (R16)*
	9. What are the positive and negative effects on body or oral health?	Perceived Benefits	*"It helps me relax and feel alert." (R9)* *"I feel more awake and focused after chewing." (R6)* *"Relieves stress after a long day." (R3)*
		Health Risks	*"It causes dry mouth and stains my teeth." (R10)* *"My gums are irritated and sensitive." (R12)* *"I feel occasional dizziness after long sessions." (R16)*
D. Psychological & Dependence Effects	10. How do you feel when you don't chew quid for a day or more?	Withdrawal Symptoms	*"I feel restless and irritated when I don't chew." (R10)* *"I get headaches if I skip chewing." (R14)* *"I feel anxious and uncomfortable." (R6)*
		Craving	*"My day doesn't feel complete without it." (R6)* *"I constantly think about chewing." (R12)* *"I crave it especially in the evening." (R16)*
	11. Does quid chewing affect your mood, energy, or focus in daily life? How?	Mood Enhancement	*"It reduces stress and keeps me alert." (R9)* *"I feel calmer and more relaxed." (R10)* *"It lifts my mood during the day." (R6)*
		Cognitive Stimulation	*"It gives me energy and helps me focus on tasks." (R16)* *"I can concentrate better when chewing." (R12)* *"It helps me stay attentive during work." (R3)*
	12. Do you think quid chewing is beneficial or harmful to oral/dental health?	Awareness of Harm	*"It can damage teeth and gums in the long run." (R10)* *"It will cause problems if I continue long-term." (R6)* *"I've noticed my teeth weakening." (R14)*
		Cognitive Dissonance	*"Sometimes it helps, but it can also be harmful." (R3)* *"I enjoy it, yet I know it's risky." (R12)* *"It's beneficial temporarily but damaging eventually." (R16)*
E. Reflections, Social & Cultural Context	13. Does quid chewing affect your social interactions? How?	Social Bonding	*"It creates bonding when we chew together." (R5)* *"Chewing together strengthens friendships." (R7)* *"It encourages group participation." (R12)*

		Social Inclusion	*"It helps me gain more friends." (R3)* *"I feel accepted when chewing with others." (R9)* *"It makes socializing easier." (R16)*
	14. Are there traditions in your community where quid chewing is important?	Minimal Cultural Integration	*any tradition." (R9)* *"No specific cultural rituals involve it." (R12)* *"It's not celebrated or traditional." (R7)*
		Personal Practice	*"It's just a personal habit." (R19)* *"I chew for my own comfort, not tradition." (R14)* *"It's a private routine." (R6)*
	15. What is the most important thing you have learned, and what advice would you give to others?	Reflective Awareness	*"Don't start because it's addictive." (R7)* *"Be careful about long-term effects." (R10)* *"Understand the risks before starting." (R12)*
		Preventive Advice	*"Be mindful because it can harm your teeth and gums." (R9)* *"Moderation is key to avoid harm." (R14)* *"Avoid starting if possible, it's addictive." (R16)*

The table shows that most respondents started chewing quid at a young age, often influenced by family members such as grandparents, parents, or siblings, as well as friends and coworkers. Respondents reported both functional and social motivations for starting, including stress relief, medicinal purposes, smoking cessation, and social inclusion. Many experienced discomfort initially, such as dizziness, nausea, or a bitter taste, but gradually adapted to chewing, making it part of their daily routines.

Regarding habits and patterns, respondents reported high frequency of chewing, usually multiple times per day, with a relatively fixed duration for each session. The number of pieces consumed daily varied, yet most maintained a stable routine regardless of the day. Chewing frequency increased in certain situations, such as after meals, during free time, or when stressed, indicating that contextual and emotional factors influence consumption.

Physically, respondents noticed changes in their teeth and gums, including discoloration, staining, irritation, and slight structural changes. They also reported altered taste and tingling or numbness in the mouth. Despite these risks, chewing was associated with perceived benefits, such as relaxation, alertness, and stress relief.

Psychologically, respondents exhibited signs of dependence, reporting withdrawal symptoms, cravings, mood enhancement, and increased focus while chewing. Many were aware of the potential harm to oral health but continued chewing, showing a conflict between enjoyment and awareness of risk. Socially, quid chewing facilitated bonding and inclusion among peers, but it was not strongly linked to cultural traditions. Respondents also reflected on its addictive nature and advised caution or moderation.

Overall, the table demonstrates that quid chewing among respondents is shaped by early exposure, social influence, functional needs, habitual routines, physical and sensory effects, psychological reinforcement, and social interactions, while carrying both perceived benefits and recognized health risks.

Mathematical Concepts Observed in Chewing Behavior

This section presents the observed behaviors of quid chewers alongside the mathematical concepts they implicitly apply in their daily practices. The analysis highlights how chewers track frequency, duration, and quantity of chewing, adjust their intake for desired effects, and coordinate sessions in social settings. By linking these

behaviors to counting, measurement, pattern recognition, proportional reasoning, and other mathematical concepts, the table provides insight into the cognitive processes underlying habitual chewing practices.

Table 3.3 Observed Behaviors of Quid Chewers and the Mathematical Concepts Applied in Their Daily Practices

Observed Behavior	Mathematical Concept Observed	How Chewers Applied It
Daily frequency of chewing	*Counting, addition*	Chewers tracked the number of times they chewed per day, showing cumulative counting.
Duration of chewing	*Measurement, estimation*	Chewers estimated minutes per session, demonstrating practical time measurement.
Quantity of quid	*Counting, multiplication*	They monitored pieces chewed per day and multiplied for weekly/monthly totals.
Timing of chewing	*Sequencing, pattern recognition*	Chewers followed routines based on specific times or activities, recognizing and predicting patterns.
Years of chewing experience	*Subtraction, timeline calculation*	Chewers calculated experience by subtracting starting age from current age.
Adjusting chewing for effect	*Ratio, proportion*	Participants adjusted the number of pieces or session length to achieve stronger or lighter effects, applying proportional reasoning.
Habit formation	*Repetition, averages*	Consistent daily sessions demonstrate intuitive averaging and repetition.
Distribution across social settings	*Set theory, categorization*	Chewers grouped sessions by location or companions (home, work, and friends), showing informal categorization.
Comparing effects across time	*Graphing, trend observation*	Some chewers noticed differences in effects depending on frequency or time, reflecting trend recognition.
Modifying intake due to stress	*Conditional reasoning, estimation*	Chewers increased or decreased chewing under stress, applying conditional "if-then" logic and rough quantitative estimation.
Oral effects tracking	*Measurement, proportionality*	Chewers noted the severity of staining or soreness relative to frequency, showing proportional reasoning.
Synchronizing with others	*Coordination, pattern alignment*	When chewing socially, participants coordinated timing and amount with peers, reflecting an intuitive understanding of synchronization and patterns.

The observed behaviors of quid chewers reveal that their daily practices involve a range of implicit mathematical concepts. Chewers tracked the frequency of chewing using counting and addition, while estimating the duration of each session demonstrated practical measurement skills. Monitoring the number of quid pieces consumed daily and calculating weekly or monthly totals reflected counting and multiplication abilities. Participants followed routines based on specific times or activities, indicating an awareness of sequencing and pattern recognition, and they calculated years of chewing experience by subtracting their starting age from their current age.

Chewers also adjusted the number of pieces or session length to achieve desired effects, demonstrating an understanding of ratio and proportion. Habit formation was evident through consistent daily sessions, reflecting repetition and intuitive averaging. When chewing occurred in different social settings, participants grouped sessions by location or companions, showing informal categorization similar to set theory. Observing differences in effects over time demonstrated trend recognition and graphing skills, while modifying intake in response to stress reflected conditional reasoning and estimation. Tracking oral effects such as staining or soreness relative to frequency illustrated proportional reasoning, and coordinating chewing sessions with others indicated an intuitive understanding of synchronization and pattern alignment.

Overall, the data show that habitual chewing practices involve not only physical and social behaviors but also complex cognitive processes, including counting, measurement, proportional reasoning, pattern recognition, and coordination. These mathematical concepts are applied intuitively, enabling chewers to manage their habits, monitor effects, and adapt their behavior over time.

Discussion

Scio-Demographic Profiles of the Respondents

The respondents of this study were evenly distributed across the municipalities of Binidayan, Bayang, Tubaran, and Lumbatan, demonstrating that quid chewing is a common practice across multiple communities within Lanao del Sur District II. This distribution indicates that the behavior is not localized to a single area but is socially embedded across the region. These observations are consistent with the findings of the World Health Organization (2012), which reported that betel quid use is prevalent in communities where it is culturally accepted and readily available.

Analysis of age groups revealed that the majority of respondents were 60 years and above, followed by those aged 40–59, suggesting that quid chewing is more prevalent among older adults. This pattern indicates that the habit is typically initiated earlier in life and maintained over long periods. Gupta and Warnakulasuriya (2002) emphasized that the prevalence of betel quid use increases with age due to prolonged exposure and habitual dependence. Similarly, Lee et al. (2014) highlighted that older individuals tend to sustain chewing practices as these behaviors become integrated into daily routines over time.

A predominant proportion of respondents were male, which reflects the tendency for men, particularly those engaged in labor-intensive occupations, to chew quid more frequently. This aligns with the findings of the World Health Organization (2012) and Senn et al. (2012), which indicate that males in rural and manual labor settings are more likely to engage in betel quid use, often due to occupational demands and social norms.

Regarding marital status, most respondents were married, followed by widowed individuals. This suggests that social and family contexts may reinforce the continuation of chewing practices, as betel quid use is often influenced by familial and peer behaviors. Yang et al. (2005) noted that betel quid chewing is commonly transmitted and maintained within social networks, highlighting the role of interpersonal influence in sustaining the habit.

Educational attainment varied among the respondents, with a large proportion having completed high school or lower levels of education. This finding may indicate limited awareness of the potential health risks associated with quid chewing. Sinha et al. (2012) observed that lower educational attainment is correlated with higher prevalence of betel quid use due to restricted access to health information. Nevertheless, the presence of respondents with college-level education suggests that social and cultural factors play a substantial role in influencing the habit, consistent with Paulino et al. (2011).

Occupational analysis revealed that the majority of respondents were farmers, followed by carpenters and other manual workers. This demonstrates that quid chewing is common among individuals engaged in physically demanding occupations, where the practice may serve as a stimulant to reduce fatigue and sustain productivity. Oakley et al. (2005) and the International Agency for Research on Cancer (IARC, 2004) reported similar findings, indicating that betel quid use is prevalent among laborers who rely on it for energy and alertness during work.

Therefore, socio-demographic profiles indicate that quid chewing is most prevalent among older, married males engaged in farming or similar occupations, with varied educational backgrounds. These findings suggest that the practice is influenced by age, gender, occupation, education, and social environment, reflecting a behavior that is both socially reinforced and culturally embedded within these communities

Quid Chewing Initiation & Experience

When did you start chewing quid, and who influenced you to start?

Based on the respondents' answers, the initiation of quid chewing typically occurred during early adolescence, often between the ages of 10 and 12. Many participants reported that family members, such as grandparents, parents, or older siblings, served as primary influences in introducing them to the practice. This early exposure suggests that quid chewing is embedded in familial routines and traditions, reinforcing its acceptance from a young age. Respondents also identified social influence as a key factor, noting that peers and coworkers

encouraged them to start chewing. These findings indicate that initiation is shaped by both family modeling and peer interactions, highlighting the social and cultural context in which the habit develops. Studies by Warnakulasuriya et al. (2002) and Yang et al. (2005) support this, showing that early initiation of betel quid chewing is strongly linked to family behavior and peer influence, which contribute to the habit's persistence across generations.

What was your main reason for starting quid chewing?

The study showed that respondents started chewing quid due to both functional and social motivations. Functionally, they used it to relieve stress, manage minor oral discomfort, or as a stimulant. Socially, family members, peers, and coworkers influenced their initiation, reflecting the role of social inclusion and communal practices in adopting the habit.

Functional motivations provide immediate effects that reinforce continued use. This aligns with Ho et al. (2017), who found stress relief and alertness are common reasons for areca nut use. Lee and Chang (2019) also noted that chewing helps maintain focus and cope with daily demands. Social influences similarly shape initiation, as observing peers and family members normalizes the behavior. Smith et al. (2016) emphasized peer influence as a strong factor in early adoption, and Gupta et al. (2018) highlighted cultural and familial reinforcement in chewing practices.

These findings indicate that quid chewing initiation is shaped by both perceived personal benefits and social pressures, suggesting that interventions should address both aspects to reduce early adoption.

How did you feel the first time you chewed quid, and how would you describe your overall experience?

The respondents' experiences reveal that initial quid chewing was often uncomfortable, characterized by bitterness, numbness, dizziness, and nausea. This initial discomfort is consistent with previous studies showing that first-time users of betel quid frequently experience unpleasant oral and physiological sensations due to the stimulant effects of areca nut (Gupta & Warnakulasuriya, 2002; Boucher & Mannan, 2002). Over time, participants reported gradual adaptation, where the habit became more pleasurable, relaxing, and integrated into their daily routines. This adaptation reflects the development of tolerance and habituation, as users become accustomed to the sensory and stimulant effects of quid (IARC, 2004). The shift from discomfort to enjoyment underscores the role of both physiological adaptation and psychosocial reinforcement in sustaining long-term chewing behaviors.

Chewing Habits & Patterns

How did you feel the first time you chewed quid, and how would you describe your overall experience?

The respondents demonstrated a high frequency of quid chewing, with some engaging in multiple sessions daily, sometimes exceeding ten times per day. Each session lasted a relatively fixed duration, ranging from five to twenty minutes, suggesting that chewing is a habitual and structured part of their daily routines. These behaviors indicate both physiological dependence and the desire to maintain the stimulant or psychoactive effects of quid consistently. Similar findings have been reported by Lee et al. (2015), who noted that habitual betel quid users tend to maintain frequent daily sessions to sustain alertness and manage fatigue. Gupta et al. (2018) also highlighted that the consistency in session duration reflects behavioral conditioning and routine reinforcement, emphasizing the role of structured habit in long-term use.

How many pieces of quid do you chew daily, and are there differences on weekdays versus weekends?

Respondents reported chewing between eight and more than ten pieces of quid daily, while some were unable to specify the exact number due to habitual repetition. Despite this variability, the intake remained consistent across weekdays and weekends, reflecting a stable and structured routine. This consistency suggests that quid chewing has become an entrenched habit integrated into daily life rather than an activity influenced by specific days or social occasions. Similar findings have been reported by Chang et al. (2018), who observed that habitual betel quid users maintain steady consumption patterns to sustain the desired stimulant effects. Noren et al. (2017) also

noted that the predictability of daily chewing reflects behavioral reinforcement, where routine intake strengthens habit formation and dependency. Such stable patterns highlight how both social and physiological factors contribute to maintaining regular chewing behaviors among habitual users.

Are there specific situations, times, or stress-related circumstances that change your chewing frequency or duration?

The respondents reported that their chewing frequency and duration were influenced by specific situations, daily routines, and stress-related circumstances. Many chewed quid after meals, during leisure activities, or when experiencing boredom, indicating that chewing serves as both a habitual and situational activity. Additionally, participants reported increasing their intake during periods of stress, such as work pressure or emotional tension, suggesting that quid chewing functions as a coping mechanism for stress management.

These observations are consistent with findings from Lee et al. (2015), who noted that betel quid users often adjust their consumption in response to environmental cues or emotional states. Similarly, Gupta et al. (2018) emphasized that social and situational triggers play a significant role in maintaining habitual chewing, with stress-related use reinforcing dependence and habitual patterns. The interplay of routine, social context, and stress-driven consumption underscores the complexity of quid chewing behavior, where psychological, social, and situational factors collectively influence usage patterns.

Physical & Sensory Effects

What changes have you noticed in your mouth, teeth, or gums since you started chewing quid?

Respondents reported noticeable changes in their oral health since starting quid chewing, with oral discoloration and structural alterations being the most common effects. Teeth staining, darkened gums, and gradual changes in coloration were widely observed, reflecting the cumulative impact of habitual chewing. Additionally, some participants experienced gum irritation, slight recession, and occasional soreness in their teeth, indicating potential damage to oral tissues over time.

These findings align with previous research highlighting the adverse oral effects of betel quid consumption. Warnakulasuriya et al. (2002) identified that habitual chewing is associated with staining of teeth and gums, gingival irritation, and increased risk of periodontal issues. Similarly, Gupta and Warnakulasuriya (2002) emphasized that the alkaloids in areca nut contribute to both discoloration and structural changes in oral tissues. The evidence underscores the chronic oral health implications of quid chewing, which can persist even in the absence of immediate pain, highlighting the need for preventive measures and oral health education among users.

Have you experienced changes in taste or other unusual sensations in your mouth while or after chewing?

The theme of Altered Taste and Sensory Response was evident among respondents, as they reported changes in taste perception and unusual sensations in the mouth associated with habitual quid chewing. Many experienced persistent bitterness, reduced enjoyment of sweet foods, and heightened sensitivity to spicy flavors. In addition, respondents reported tingling, numbness, and warmth in the mouth and gums, reflecting the direct effect of quid constituents on oral sensory receptors and nerves.

These observations are supported by studies highlighting the sensory impact of betel quid and areca nut consumption. Tsai et al. (2009) noted that habitual betel quid chewing can lead to alterations in taste sensitivity and induce tingling or numbness due to chemical irritants. Lee et al. (2012) also reported that long-term chewing stimulates the oral mucosa, resulting in abnormal sensations and modifications in taste perception. These findings indicate that sensory effects are a significant and consistent aspect of the quid chewing experience, complementing the physical changes observed in oral health.

What are the positive and negative effects on body or oral health?

The results indicate that chewing provides several perceived benefits for users. Many participants reported increased alertness, improved focus, and a sense of relaxation, suggesting that chewing serves as a tool for

enhancing cognitive performance and managing stress. These observations are consistent with previous studies, which found that habitual chewing can improve attention, mental clarity, and reduce perceived stress (Smith & Boden, 2012; Hasegawa et al., 2016). The benefits appear to be particularly relevant during daily activities, work, or leisure, highlighting the psychological and situational role of chewing behavior.

However, chewing also carries potential health risks, particularly affecting oral and general health. Participants reported experiencing dry mouth, gum irritation, tooth staining, and occasional dizziness, indicating both local and systemic effects. These findings align with research showing that prolonged chewing, especially of products containing stimulants or nicotine, can lead to oral mucosal changes, gum sensitivity, and other health concerns (Gupta et al., 2018; Lee et al., 2015). Overall, the results illustrate a dual pattern in chewing behavior: while it provides cognitive and emotional benefits, it also poses potential risks, emphasizing the importance of moderation and oral care.

Psychological & Dependence Effects

How do you feel when you don't chew quid for a day or more?

Respondents reported experiencing both withdrawal symptoms and cravings when they did not chew quid for a day or more. Common withdrawal symptoms included restlessness, irritability, headaches, anxiety, and general discomfort, suggesting that habitual use can lead to physical and psychological dependence. These observations are consistent with research indicating that prolonged or frequent use of betel quid or similar products can result in mild to moderate withdrawal effects when consumption is interrupted (Lee et al., 2015; Gupta et al., 2018).

In addition to withdrawal, participants also reported strong cravings, often feeling that their day was incomplete without chewing and experiencing frequent thoughts about the activity. Cravings were reported to be particularly intense during certain times, such as evenings, highlighting the situational and habitual reinforcement of quid use. These findings suggest that both physical withdrawal and psychological craving contribute to continued consumption, reflecting the addictive potential of habitual chewing behaviors.

Does quid chewing affect your mood, energy, or focus in daily life? How?

Participants reported that quid chewing positively influences mood and emotional well-being. Many noted that it reduces stress, promotes relaxation, and enhances overall mood during the day, indicating that chewing may serve as a coping mechanism for managing daily stressors. These observations are supported by studies showing that habitual chewing can have mood-enhancing effects and reduce perceived stress through sensory stimulation and repetitive motor activity (Smith & Boden, 2012; Hasegawa et al., 2016).

In addition to mood benefits, participants reported improved cognitive performance, including increased energy, better focus, and heightened attention during work or study tasks. These findings align with research demonstrating that chewing can enhance alertness, concentration, and mental clarity, possibly due to increased cerebral blood flow and sensory activation (Smith & Boden, 2012). Together, the mood-enhancing and cognitive-stimulating effects suggest that quid chewing functions both as a psychological and functional tool in daily life, reinforcing habitual use.

Do you think quid chewing is beneficial or harmful to oral/dental health?

The results suggest that participants are aware of the potential harms of quid chewing on oral and dental health. Many reported concerns such as weakened teeth, gum irritation, and long-term damage, which aligns with research showing that habitual betel quid use is associated with oral mucosal lesions, periodontal disease, alveolar bone loss, and an increased risk of oral potentially malignant disorders (Anand et al., 2014; Javed et al., 2013; Berniyanti et al., 2024). These findings indicate that users recognize the physical consequences of prolonged chewing, reflecting a reasonable level of health awareness.

At the same time, participants expressed cognitive dissonance, acknowledging that while chewing may provide temporary benefits such as alertness or stress relief, it also carries significant long-term oral health risks. This mirrors studies showing that betel quid dependence can coexist with awareness of oral harm, yet psychological,

cultural, and habitual factors often reinforce continued use (Chiu et al., 2023; Lin et al., 2022). The dual perception of short-term benefit and long-term risk highlights the complex interplay between behavioral reward and health consequences, suggesting that education and behavioral interventions may be necessary to reduce harm while addressing habitual or socially reinforced chewing behaviors.

Reflections, Social & Cultural Context

Does quid chewing affect your social interactions? How?

The results indicate that quid chewing is not merely an individual habit but a socially reinforced behavior that strengthens interpersonal connections. Participants reported that chewing together fosters bonding, encourages group participation, and facilitates social inclusion, suggesting that the act of chewing serves as a shared cultural and social ritual. This aligns with Lin et al. (2017), who found that betel quid chewing is embedded in social life and communal gatherings, reinforcing group identity and cultural cohesion.

Furthermore, social and psychosocial factors appear to play a key role in maintaining habitual chewing. Muthukrishnan et al. (2022) and Chang et al. (2007) highlight that peer influence, cultural norms, and social expectations strongly impact both initiation and continued use of chewing substances. Similarly, research validating the *Reasons for Betel-Quid Chewing Scale* emphasizes social and cultural motivations as central determinants of regular chewing. Collectively, these findings suggest that the social benefits of chewing, such as enhanced belonging, acceptance, and shared participation, may reinforce habitual use, making quitting or reducing use more challenging due to the intertwined social and psychological rewards.

Does quid chewing affect your social interactions? How?

The findings show that, for many participants, quid chewing is not strongly integrated into cultural or traditional practices. Several respondents indicated that there are no specific rituals, celebrations, or community events that involve chewing, highlighting that in these communities, the behavior is largely disconnected from cultural norms. This aligns with studies showing that while betel quid chewing is highly ritualized in some regions, in other areas it has shifted to a more individual habit with minimal cultural reinforcement (Lin et al., 2017; Chiu et al., 2023).

Participants described chewing as a personal practice rather than a communal or cultural activity. They reported engaging in chewing for comfort, relaxation, or personal routine, indicating that the habit has become individualized and privately maintained. Research on betel quid habits emphasizes that personal motivations, such as stress relief or enjoyment, often persist independently of cultural traditions, which may explain the lack of ritualistic use in these communities (Hussain et al., 2018; Little et al., 2014). Overall, quid chewing in this context appears to function primarily as a personal behavioral choice rather than a culturally sanctioned practice.

What is the most important thing you have learned, and what advice would you give to others?

Many participants demonstrated increased awareness of the negative health consequences of quid chewing and reflected on the importance of understanding these risks before starting or continuing the habit. This recognition of harm and risk perception is consistent with research showing that lower awareness of betel quid's carcinogenic effects and other oral health harms is associated with continued use, while higher awareness is linked with motivation to quit and healthier attitudes toward cessation (Ghani et al., 2011; Aweau et al., 2024). Chewers who perceive greater personal health risks are more likely to express intentions to stop and endorse caution, indicating that recognition of harm plays a key role in reflective awareness and preventive thinking.

In addition to risk recognition, participants' advice emphasized prevention, moderation, and avoidance, reflecting a health-conscious attitude that parallels findings from qualitative studies on chewing behavior. Such studies show that awareness of oral health implications and personal motivation support quitting or reducing chewing, especially when negative impacts on quality of life are acknowledged (Chiu et al., 2023; Tamí-Maury et al., 2019). When users understand the potential long-term harms, including oral disease and cancer, they are more likely to promote caution and preventive advice to peers and community members.

What mathematical concepts are implicitly applied by quid chewers in their daily practices?

The behaviors of quid chewers demonstrate that everyday routines can involve significant mathematical reasoning even in the absence of formal instruction. Quid chewers tracked the frequency of chewing sessions, calculated cumulative quantities, estimated duration, and adjusted intake to achieve desired effects. These behaviors reveal practical applications of counting, addition, multiplication, measurement, estimation, ratio, and proportion. Similar findings have been reported in studies of informal numeracy, where routine daily activities such as cooking, shopping, or time management require the application of basic arithmetic, measurement, and proportional reasoning (Nunes, Schliemann, & Carraher, 1988; LeFevre et al., 2009). These observations suggest that habits and personal routines can naturally foster quantitative reasoning in real-life contexts.

Quid chewers also applied higher-level mathematical concepts such as pattern recognition, sequencing, conditional reasoning, and coordination with others. For example, social chewing sessions required synchronization of timing and quantity, demonstrating intuitive understanding of patterns and alignment. Research on informal mathematical learning supports this, showing that individuals engage in complex problem-solving, categorization, and trend observation in everyday life, which strengthens cognitive skills without formal teaching (Purpura & Lonigan, 2013; Daucourt et al., 2021; Lartey, 2024). The observation that quid chewers track oral effects relative to chewing frequency further illustrates proportional reasoning and practical graphing skills. Collectively, these behaviors indicate that everyday habits, even those primarily undertaken for personal or social reasons, can serve as a platform for the implicit application of mathematical concepts, highlighting the link between routine human activity and cognitive development.

Limitations of the Study

This study was limited by its context-specific sample of twenty quid chewers from four municipalities in Lanao del Sur, Philippines, including Binidayan, Bayang, Tubaran, and Lumbatan. As a result, the findings may not generalize to other populations of quid chewers in different regions of the Philippines or in urban settings, where socio-cultural and environmental factors may differ. The observed chewing patterns, lived experiences, and cognitive strategies should therefore be interpreted as characteristic of the selected communities rather than representative of all Filipino quid chewers.

Another limitation lies in the reliance on self-reported data as the primary source of information. While interviews captured respondents' personal narratives and reflections on chewing habits, physical, psychological, and social effects, such accounts may be influenced by recall bias or social desirability bias. Respondents may have underreported or overemphasized certain aspects of their behavior, meaning that the reported patterns may not fully correspond to real-time chewing practices.

Additionally, thematic coding of qualitative data, despite inter-coder checks, remains interpretive and subject to potential researcher bias. The identification of cognitive processes, including the implicit application of mathematical reasoning, may have been influenced by the researcher's perspectives during analysis. Future studies could address these limitations by incorporating multiple data sources, such as direct observation, diary entries, or longitudinal tracking of chewing behavior, and by expanding the sample to include a broader range of communities to examine differences in practices across socio-cultural and geographic contexts.

CONCLUSION

This study investigated the socio-demographic profiles, lived experiences, and cognitive and mathematical processes of twenty quid chewers from four municipalities in Lanao del Sur, Philippines. The findings revealed that socio-demographic characteristics, including sex, marital status, educational attainment, and occupation, provide the contextual foundation that shapes initiation, maintenance, and patterns of chewing behavior. Lived experiences, encompassing initiation and early exposure, habitual chewing routines, physical and sensory effects, psychological and dependence effects, and reflections within social and cultural contexts, further influence how respondents engage with and perceive quid chewing. These dimensions highlight the complex interplay between personal, social, and cultural factors in shaping chewing practices.

The study also demonstrated that respondents employ cognitive strategies and mathematical reasoning in their daily chewing routines. This includes the estimation of quantity, management of consumption, and scheduling of chewing sessions. These behaviors indicate that quid chewing is not solely a habitual or automatic practice, but rather involves deliberate planning, practical calculation, and self-regulation. The integration of cognitive and mathematical processes underscores the structured, adaptive, and intentional nature of chewing practices within the respondents' everyday routines.

However, the findings are context-specific, as participants were drawn from selected municipalities in Lanao del Sur, and may not be generalizable to all quid chewers in the Philippines, particularly in urban areas or regions with different socio-cultural environments. The study emphasizes the importance of considering socio-demographic, experiential, cognitive, mathematical, and cultural dimensions when examining chewing behavior. It also suggests that public health interventions, community education, and future research should address both the behavioral patterns and potential health consequences associated with quid chewing, while taking into account the socio-cultural and cognitive contexts that shape these practices.

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APPENDIX

"Lived Experiences and Mathematical Patterns of Quid Chewers in Lanao del Sur: A Qualitative Study"

PART 1: SOCIO-DEMOGRAPHIC PROFILE

Instruction: Please check (✓) the box that best describes your information. For numeric responses, please write your answer in the space provided. Your answers will be kept confidential and will only be used for research purposes.

1. Age

Please write your age in years: _____

2. Sex/Gender

☐ Male
☐ Female

3. Marital Status

☐ Single
☐ Married
☐ Widowed
☐ Separated / Divorced

4. Educational Attainment

☐ Elementary
☐ High School
☐ Vocational / Technical
☐ College / Tertiary
☐ Other: _____

5. Occupation

☐ Student
☐ Laborer / Worker
☐ Vendor
☐ Fisher / Farmer
☐ Housewife / Home-based
☐ Other: _____

6. Years of Performing Kambama / Quid Chewing

☐ 1–5 years
☐ 6–10 years
☐ 11–15 years
☐ 16–20 years
☐ 21+ years
☐ Other: _____

7. Age When Started Quid Chewing

☐ 5–9 years
☐ 10–14 years
☐ 15–19 years
☐ 20–24 years
☐ 25 years and above

8. Daily Frequency of Quid Chewing

☐ 1–2 times per day
☐ 3–4 times per day
☐ 5–6 times per day
☐ 7 or more times per day
☐ Other: _____

PART II: OPEN-ENDED QUESTION INTERVIEW (LIVED EXPERIENCES OF QUID CHEWERS)

A. Quid Chewing Initiation & Experience

1. When did you start chewing quid, and who influenced you to start?
2. What was your main reason for starting quid chewing?
3. How did you feel the first time you chewed quid, and how would you describe your overall experience?

B. Chewing Habits & Patterns (Mathematical Focus)

4. How many times a day and how long do you usually keep quid in your mouth each time?
5. How many pieces of quid do you chew daily, and are there differences on weekdays versus weekends?
6. Are there specific situations, times, or stress-related circumstances that change your chewing frequency or duration?

C. Physical & Sensory Effects

7. What changes have you noticed in your mouth, teeth, or gums since you started chewing quid?
8. Have you experienced changes in taste or other unusual sensations in your mouth while or after chewing?
9. In your experience, what are the positive and negative effects of quid chewing on your body or oral health?

D. Psychological & Dependence Effects

10. How do you feel when you don’t chew quid for a day or more?
11. Does quid chewing affect your mood, energy, or focus in daily life? How?
12. Do you think quid chewing is beneficial or harmful to your oral and dental health?

E. Reflections, Social & Cultural Context

13. Does quid chewing affect your social interactions? How?
14. Are there traditions in your community where quid chewing is important?
15. What is the most important thing you have learned, and what advice would you give to those thinking of starting or already chewing quid