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The Sanitation-Related Quality Of Life Index (Sanqol5) Among Tribals- An Investigation

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Abstract
Improvement of water and sanitation conditions may reduce infant mortality, particularly in countries like India, where open defecation is highly prevalent. It can also provide dignity, privacy, and reduce the spread of diseases and shame. We found good evidence for construct validity, with support ($P < 0.05$) for 87% of hypothesised associations between SanQoL-5 and toilet quality characteristics and a strong relationship between toilet facilities and the dignity and privacy of life. In 120 tribal samples of Telangana, only 9% of instances showed evidence of meaningful differential item functioning. SanQoL-5 conformed to expectations in item response theory models. SanQoL-5 can be used in impact evaluation, monitoring, needs assessment, and benefit assessment.

Keywords: sanitation, quality of life measurement, validity, tribals, Telangana.

Introduction

A key element of Sustainable Development Goal (SDG-6), which seeks to guarantee universal access to and sustainable management of water and sanitation. SDG 6.2: End open defecation and provide everyone with fair access to sufficient sanitation and hygiene, with a focus on the needs of women, girls, and those in vulnerable situations (Caruso, 2017), Global Goals. Sustainable Development Goal 6.2 measures sanitation progress by type of toilet service. Improving people's subjective experiences of sanitation is also important, but it is rarely rigorously measured. The Sanitation-related Quality of Life index (SanQoL-5) combines answers to five simple questions (disgust, privacy, disease risk, shame, and safety) into an overall score ranging from 0 to 1 (Akter, 2024; Novotný, 2018).

In 2014, the Indian government launched the Swachh Bharat (Clean India) Mission (SBM) aimed at improving public sanitation. By 2020, the program had constructed 100 million toilets nationwide. In SBM's first five years, national rates of open defecation decreased from 60% to 19%, and the availability of toilets doubled. The program also emphasised local community mobilisation, following an Information, Education, and Communication approach, in which weekly messages via SMS, phone calls, and community workers were delivered to rural households, with reminders on the importance of safe and hygienic sanitation practices (Chakrabarti, 2024).

What is the SanQoL-5

The SanQoL-5 Index is an instrument for measuring people's experiences with sanitation, focusing on how sanitation affects their quality of life. It evaluates these experiences by asking five important questions about disgust, illness, privacy, shame, and safety. Each question is measured on a 3-level frequency scale (always, sometimes, never), with 'never' representing the best outcome. The index can be used for sanitation-related monitoring, evaluation, and needs assessments, and is designed for use in various contexts.

SanQoL-5 Index

The SanQoL-5 is a multi-attribute measure of sanitation-related QoL, developed from primary qualitative research and supported by the literature on what people value about sanitation. Its descriptive system (Table 1) has five questions, each measuring a capability-based attribute: disgust, disease, privacy, shame, and safety. Each is measured on a 3-level frequency scale (always, sometimes, never), with questions framed such that "never" is the best outcome. Therefore, there are 15 attribute levels to be valued in 120 samples.

Review of Literature

Lal (2020) conducted an empirical study on two Adivasi villages titled 'Freedom from Open Defecation.' According to the study, 73% of Adivasis reported that RMP is helping them improve their health, while 35% stated that they have health issues. Over 12% still defecate in the open, whereas 87% have access to toilets. 50% of women reported not using sanitary napkins, and 18.3% said they had exceptional issues with open defecation. These findings suggest that with continued efforts, there is a potential for significant positive change in these communities.

Kavita (2013) makes an effort to investigate the economic impact of inadequate sanitation on women's health in Warangal District. This essay focuses on the various sanitation-related health problems that the majority of rural households experience. Ninety-four per cent of the women have abdominal pain, 86% uterine-related issues, 85% pee burns, and 42% water burn diseases, according to a research study conducted in two villages in the Warangal region. Lal (2011) conducted an economic

analysis of health care services in Andhra Pradesh, India, specifically in tribal communities. They discover that tribal communities are more likely to have frequent illnesses, such as general fever, malaria, typhoid, diarrhoea, anaemia, jaundice, and so forth. Fever accounts for 35 per cent of the respondents, with malaria (20 per cent), typhoid (15 per cent), diarrhoea (12 per cent), anaemia (8 per cent), and jaundice (10 per cent) following. According to this report, low- and middle-income groups make up the bulk of victims.

Devanna S(2017) conducted a study in the Adilabad District on the health conditions of primitive tribes. The purpose of this paper is to describe the health conditions of the primitive tribes in the selected study area and to examine their socioeconomic and demographic status. A third of the sample respondents—34 per cent—are illiterate. These findings underscore the urgent need to address the health and socioeconomic challenges faced by these communities. Lal (2020a) examined the health and economic costs associated with poor sanitation. The health of people is seriously compromised by poor water quality and inadequate access to improved sanitation. According to the burden of disease analysis, one-third of the most significant risk factors for ill health in developing countries with high mortality rates are a lack of access to a protected water supply, sanitation, and hygiene. The Swachch Bharat Mission (2014) is one such programme that has been implemented in India to achieve open defecation-free status by 2019, as noted by Somenath Kar (2017). As a result, many people suffer from diseases brought on by poor personal and environmental hygiene practices and even die due to them (Tripathi, 2021).

Hypotheses

1. There is no relationship between the SanQoL-5 index and toilet users' opinions in tribal areas, and
2. There is no relationship between toilet facilities and the dignity and privacy of life.

The Study Area and the Tribal Community

Bhadradri Kothagudem district is the largest in the Indian state of Telangana, covering 7,483 km and sharing borders with Khammam, Mahabubabad, Mulugu, Chhattisgarh, and Andhra Pradesh. Dummugudem is a village in the district, with 186 families and a population of 646, including 68 children aged 0-6. Dummugudem has a lower literacy rate than the state, with a literacy rate of 54.50% in 2011, compared to 66.46% in Telangana state. The majority of the population belongs to the Scheduled Tribe (ST) category, accounting for 49.69% of the total population.

The Koyas: This tribe is known as the Koitur in their dialect. The people of this tribe can be found in Adilabad, Karimnagar, Warangal, Khammam, East Godavari and West Godavari Districts. Koyas and Gonds racially, linguistically and culturally belong to the same stock. Additionally, the social organisation of the Koyas and Gonds is identical (Lal, 2022).

Results and Discussion

The paper covered demographic variables, literacy, occupation, income particulars, sanitation, sanitation-related quality of life index questions, and results of SanQoL-5 questions for toilet users.

Table 1: Demographic Variables of Sample Respondents

Sl. No	Variables	Indicators	Frequency/ Percentage
1	**Age Group**	20 - 30 Yrs	19(15.8)
		31 - 40 Yrs	53(44.2)
		41 - 50 Yrs	39(32.5)
		51-60Yrs	9(7.5)
		Total	120(100.0)
2	**Marital Status**	Married	101(84.2)
		Unmarried	10(8.3)
		Widow	9(7.5)
		Total	120(100.0)
3	**Sex**	Male	55(45.8)
		Female	65(54.2)
		Total	120(100.0)
4	**Type of Family**	Nuclear	100(83.3)
		Joint	20(16.7)
		Total	120(100.0)
5	**Education**	Illiterate	91(75.8)
		Primary	8(6.7)
		Secondary	6(5.0)
		Intermediate	12(10.0)
		Undergraduate	3(2.5)
		Total	120(100.0)

Table 1 presents age, marital status, sex, family type, and educational attainment as the criteria used to categorise demographic data. According to the age distribution, 44.2% of the respondents fall within the age range of 31 to 40. The age group of 41 to 50 years old, which makes up 32.5% of the total, comes next. 15.8% of people are in the 20–30 age range, while 7.5% of people

are in the 51–60 age range. This suggests that they are especially well-represented in their middle years. Married people make up a substantial share of the respondents (84.2%), followed by unmarried people (8.3%), and widows (7.5%). With a balanced gender distribution, males comprise 45.0%, and females comprise 54.2%. Eighty-three per cent of the responders are from nuclear households. On the other hand, 16.7% reside in joint families. According to the respondents' educational status, 75.8% of them are illiterate. Just 5.0% of people have completed high school, while just 6.7% have finished primary school. 10.0% of people have intermediate-level education, while only 2.5% have earned a college degree.

Table 2: Occupation and Economic Particulars of Sample Respondents

Variables	Indicators	Percentage
Occupation	Labour	48(40.0)
	Agriculture	69(57.5)
	Employee	1(0.8)
	Total	120(100.0)
Particulars of Employment	Daily- Wage	112(93.3)
	Temporary	7(5.8)
	Regular	1(0.8)
	Total	120(100.0)
Earning per Month	Below 1500	65(54.2)
	1500-2000	28(23.3)
	2000-2500	12(10.0)
	3000-3500	7(5.8)
	Above 4000	8(6.7)
	Total	120(100.0)

According to statistics from Table 2, a significant majority of respondents (57.5%) rely on agriculture as their primary source of income. Labour-related activities, such as employing, come next (40.0%). Just 0.8% of people are salaried, while 1.7% work in other professions. The vast majority of those surveyed (93.3%) work for a daily wage. Just 5.8% have a temporary job, while only 0.8% have a permanent position. This data illustrates an economic structure where low-income earners comprise the majority. The majority of respondents (54.2%) earn less than ₹1,500 per month, followed by those who earn between ₹1,500 and ₹2,000 (23.3%), and those who earn between ₹2,000 and ₹2,500 (10.0%). Just 5.8% of respondents indicate incomes between ₹3,000 and ₹3,500, and just 6.7% report earnings exceeding ₹4,000.

Table 1: SanQoL-5 questions (descriptive system)

Attribute	Question	Responses
Disgust	How often do you feel disgusted when using the toilet?	Always Sometimes Never
Disease	How often do you worry that the toilet spreads diseases?	Always Sometimes Never
Privacy	How often do you worry about being seen while using the toilet?	Always Sometimes Never
Shame	How often do you feel ashamed about using the toilet	Always Sometimes Never
Safety	How often do you feel unsafe while using the toilet?	Always Sometimes Never

Table 2: SanQoL-5 questions for toilet users

Attribute	Question	Responses			Total
		Never	Sometimes	Always	
Disgust	How often do you feel disgusted when using the toilet?	105	15	0	120
Disease	How often do you worry that the toilet spreads diseases?	100	20	0	120
Privacy	How often do you worry about being seen while using the toilet?	109	11	0	120
Shame	How often do you feel ashamed about using the toilet	109	11	0	120
Safety	How often do you feel unsafe while using the toilet?	108	12	0	120

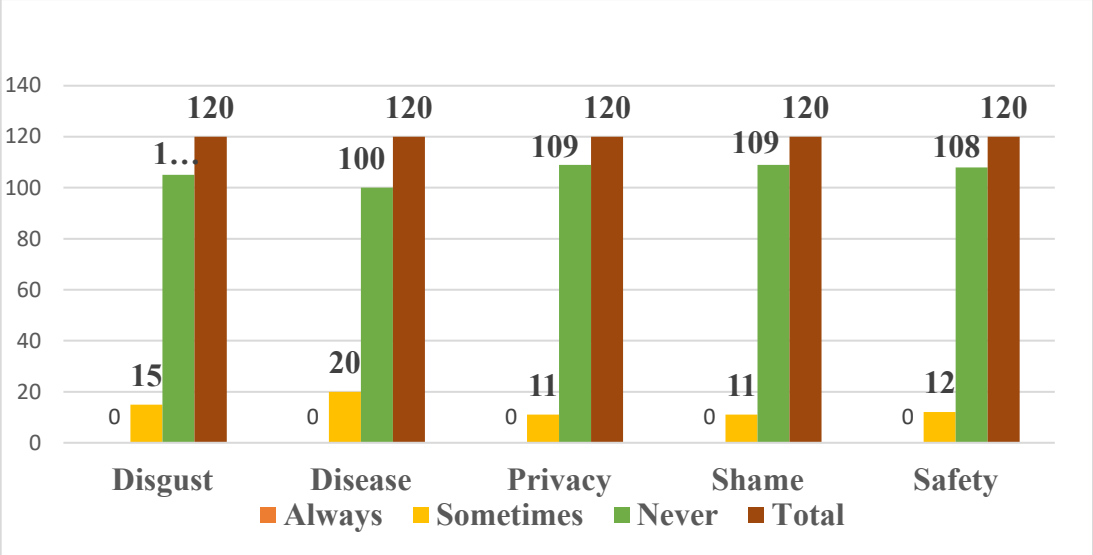

Figure-1. SanQoL-5 questions for toilet users (descriptive system)

Table 2 and Figure reveal that, out of 120 sample respondents, 105 reported never feeling disgusted when using the toilets. 100 samples of opinion that they do not worry about using the toilet spreading diseases. One hundred nine respondents stated that they never worry about being seen while using the toilet, as they feel it is a private space. Another 109 respondents asked, 'Do you feel ashamed about using the toilet?' They replied that they never felt any shame. One hundred eight sample respondents replied that they never feel unsafe while using the toilet, whether in a built-in home or shared community toilets.
Null-hypothesis (H_0) = There is no significant association between the SanQoL-5 index and toilet users' opinion in tribal areas.

Table 3: Chi-Square Test Result

S. No.	N	Calculated value	p-value	Result
1	120	1.521	0.001	Accept (H_0)

Table 3 shows that the chi-square statistic value is 1.521. The *p*-value is 0.001, $\alpha = 0.05$ at n=120. Hence, the calculated p-value is significant at $p<.05$, and the null hypothesis is rejected. There is a significant association between the SanQoL-5 index and the opinions of toilet users in tribal areas.
Null-hypothesis (H_0) = There is no significant association between toilet facilities and the dignity and privacy of life

Table 4: Chi-square Test Result

S. No.	N	Calculated value	p-value	Result
1	120	0.122	0.004	Accept (H_0)

Table 4 shows that the chi-square statistic value is 0.122. The *p*-value is 0.004, $\alpha = 0.05$ at n=120. Hence, the calculated p-value is significant at $p<.05$, and the null hypothesis is rejected. Therefore, there is a strong and significant association between access to toilet facilities and the dignity and privacy of life.

Conclusion and Suggestions

Toilet users value quality of life (QoL) outcomes, which sanitation interventions can improve. If applied in future impact evaluations alongside health outcomes, SanQoL, and similar measures could help sanitation decision-makers understand which types of sanitation interventions most improve people's QoL as well as prevent disease among the tribal community.
Human dignity and sanitation are inextricably intertwined. A life of dignity is facilitated by having access to adequate sanitation, which includes secure restrooms and waste disposal. This is a fundamental human right that has a direct impact on one's health, safety, and general well-being. On the other hand, poor sanitation can result in numerous detrimental effects, including illness, social stigma, and a decline in one's sense of self.

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