

FULL PAPER

Understanding indigenous peoples health-seeking behaviors: Assessment of functional impairment among tribal women with anemia in dharmapuri district in Tamil Nadu, India

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Anemia continues to be a chronic public health problem among women as is the solution to mitigate Anemia, particularly among Tribal women. The presence of anemia among women of reproductive age has been associated with functional outcomes ranging from fatigue, poor appetite, malaise, and poor pregnancy outcomes among pregnant women. This study aims to study if Functionality impairment or lack of, could be one of the reasons for not seeking healthcare services and for noncompliance to IFA consumption. The Karnofsky Performance Scale Index allows patients to be categorized based on their functional impairment. There are 3 categories based on varying nuances in impairment from Normal to Death. We administered this to women with anemia in the Sitteri hills of Dharmapuri District. These women to assess Hemoglobin levels, blood samples were obtained from each participant through intravenous blood sample collection. The samples are 2 mL of blood was collected in EDTA vacutainers and immediately transported as Complete Blood Count along with Haemoglobin and other indices were run with Sysmex POCH machine. The functional status among women with anemia revealed that around 2/3rd of the women reported normal to near normal functionality and close to 1/3rd reported near normal functionality while exhibiting few symptoms and signs. Among the women with anemia, 88 % reported having moderate anemia and 12.2% reported severe anemia. Tribal women seem to be unaffected by mild discomfort or mild impairment due to anemia and seem to have adapted their functionality to the lowered Hb levels to lead normal lives.

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KEYWORDS

Anemia; health seeking behavior; tribes; functional impairment.

Introduction

Anemia remains a persistent public health challenge worldwide, particularly in Low- and Middle-income countries [1-6]. In India, the already precarious nutritional status of women is exacerbated by social norms,

discriminatory practices from birth, and unequal access to healthcare services. Anemia adversely affects women of reproductive age and child health, leading to increased morbidity, maternal mortality, and hindered socio-economic development [1].

According to the World Health Organization (WHO), anemia is characterized by a decrease in red blood cell count, hemoglobin levels, or compromised oxygen-carrying capacity, hindering the body's ability to meet physiological demands [5]. Various factors contribute to anemia, including hemoglobinopathies, infections such as malaria, and nutritional deficiencies in vitamins like A and B12, along with certain minerals. Iron deficiency stands out as the primary cause, particularly prevalent among reproductive and adolescent women due to inadequate access to iron-rich foods and iron loss during menstruation and pregnancy [7].

The severity and impact of anemia depend on multiple factors, including socio-economic conditions, rural residence, age, educational attainment, empowerment levels, nutritional status, and reproductive history. Tribal communities face additional challenges, residing in remote areas with limited access to healthcare facilities, leading to delayed intervention in addressing health issues [8]. Typically, individuals seek medical attention only when their daily functioning is significantly affected.

This study aims to explore the health-seeking behavior of Malayali tribal women

with anemia by assessing their functionality using the Karnofsky Performance Status scale [9]. Understanding how these women navigate healthcare utilization amidst their functional impairments can provide valuable insights for targeted interventions and improved healthcare delivery in tribal communities.

Methods

The study was a community-based epidemiological survey conducted among Malayali tribes with anemia residing in the Sitteri Hills of Dharmapuri District.

Study design

The study is a cross sectional analytical study, using a non-probabilistic convenient sampling.

This study was cleared by the Institutional Ethics Committee of SRM School of Public Health.

Methods

Karnofsky Performance status was used to assess the functionality of people (Table 1).

TABLE 1 Karnofsky Performance Status scale definitions rating (%) criteria

Able to carry on normal activity and to work; no special care needed	100	Normal no complaints; no evidence of disease
	90	Able to carry on normal activity. Minor signs or symptoms of disease
	80	Normal activity with efforts; some signs or symptoms of disease
Unable to work and able to live at home and care for most personal needs. Varying amount of assistance needed	70	Cares for self; unable to carry on normal activity or to do active work
	60	Requires occasional assistance, but is able to care for most of his personal needs
	50	Requires occasional assistance and frequent medical care
Unable to care for self; require equivalent of institutional or hospital care; disease may be progressing rapidly.	40	Disability requires special care and assistance
	30	Severely disabled; hospital admission is indicated although supportive treatment necessary
	20	Very sick; hospital admission necessary; and active supportive treatment necessary
	10	Moribund; fatal processes progressing rapidly
	0	Dead

living with anemia. The Karnofsky Performance Status (KPS) is a beneficial tool with which one can perform measurement of and compare between the functional statuses of individual patients. The percentages of the KPS describe three states (conditions): A (100-80%): able to carry on normal activity and to work, with no special care needed, B (70-50%): unable to work, able to live at home and care for most personal needs varying amount of assistance needed and C (40-0%): Unable to care for self requires equivalent of institutional or hospital care. Disease maybe progressing rapidly. These states describe distinct levels of performance (Table 2).

As part of the study, we conducted camps in Sitteri for which we networked with the Panchayat leader a month prior, after seeking his support we were able to rally a group of women for the study. To assess anemia, blood samples were obtained from each participant

through intravenous blood sample collection. The samples are 2 mL of blood was collected in EDTA vacutainers. These samples were promptly transported to the laboratory at SRM Medical College and Hospital, maintaining a cool temperature and packed.

In the laboratory, a complete blood count (CBC) was conducted, which included measurements of hemoglobin (Hb) levels and red blood cell (RBC) indices.

Results and discussion

In total, 98 female respondents were chosen for the study (Table 2). Nearly $\frac{3}{4}$ of these respondents were married, while 27.6% were unmarried. About 29% of the respondents fall within the age group of 16 to 20 years, 38% are in the age group of 21 to 30 years, and 26.5% are in the age group of 31 to 40 years. Only 12.2% of the respondents are from the age group above 40 years.

TABLE 2 Demographic characteristics

Characteristics	Character	Frequency	Percentage
Marital Status	Married	71	72.4
	Unmarried	27	27.6
Age Classification	16 to 20 Years	28	28.6
	21 to 30 Years	32	32.7
	31 to 40 Years	26	26.5
	Above 40 Years	12	12.2

With regards to marital status, approximately 14.1% of married women are experiencing severe anemia, while the majority (85.9%) of the respondents had

moderate anemia. Among unmarried women, as many as approximately 92.6% of the respondents have moderate anemia, and 7.4% are experiencing severe anemia (Table 3).

TABLE 3 Marital status and anemia

Characteristics	Severe Anaemia	Moderate Anaemia	Total
Married	10(14.1%)	61(85.9%)	71
Unmarried	2(7.4%)	25(92.6%)	27
Total	12	86	98

In the age group of 16 to 20 years, there are 24 respondents with moderate anemia and 4 with severe anemia. In the age group 20 to 30-years group, we found that 29 individuals have moderate anemia, while 3 individuals have severe anemia. In the 30 to

40-year age group, 23 respondents are experiencing moderate anemia, and 3 have severe anemia. Among those aged above 40 years, 10 individuals have moderate anemia, while 12 individuals are dealing with severe anemia (Table 4, Figure 1).

TABLE 4 Age and anemia classification

Characteristics		Severe anemia	Moderate anemia	Total
Age classification	16 to 20 years	Frequency	24	28
		%	85.7	100.0
	20 to 30 years	Frequency	29	32
		%	90.6	100.0
	30 to 40 years	Frequency	23	26
		%	88.5	100.0
Total		Frequency	10	12
		%	83.3	100.0
		Frequency	86	98
		%	87.8	100.0

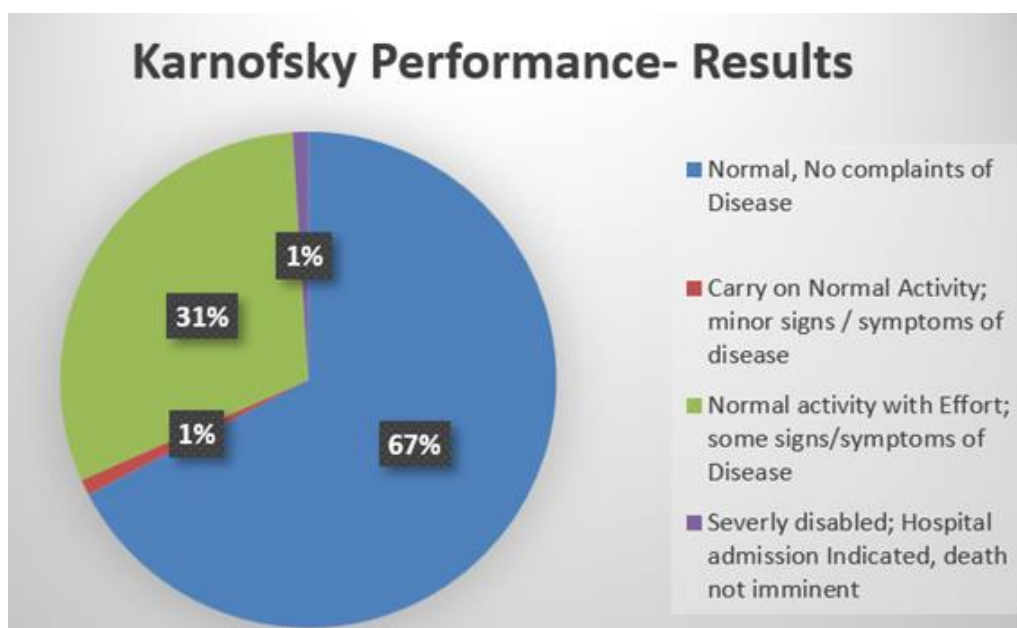


FIGURE 1 Karnofsky performance status

Findings from the analysis of the Karnofsky Performance Status reveal that close to 2/3rd of the women reported the ability to carry on normal activity and had no complaints of disease, while close to 1/3rd of the respondents reported normal activity with effort, some signs or symptoms of disease. Only 1 person reported severely disability with possibility of hospital admission.

There is a dearth of information regarding the indigenous communities and their health

seeking behaviors particularly among the Malayali tribes of Dharmapuri District. Gandhi et.al. have reported on Tribal healthcare seeking behavior and according to them the health is understood from "functional perspective" and as a state of dynamic equilibrium between the environment and the organism and little is understood from the biomedical perspective.

According to NFHS 5 [10], Dharmapuri district reported around 42% of women (19-

49 years) to have anemia and reporting on IFA consumption over 74% of pregnant women reported consuming IFA for 180 days or more, while 92% pregnant women reported consuming IFA for 100 days or more. Uma Maheswari *et al.* [11], in their study as recently as 2020 on the Malayali tribes of the Javadhu hills reported 100% of Malayali women in Javadhu hills have anemia. A similar situation was encountered at Sitteri as well with all the 98 women that we assessed reported to have anemia (<11 mg/dL).

To gain a deeper understanding of health seeking behavior with regards to anemia, we hypothesized that symptoms of conditions like anemia may not warrant a need to visit the physician since they do not experience debilitating conditions. This trait among the tribes has been reported in earlier studies that there is a perception of the lack of importance or severity of anemia compared to other symptoms/illnesses that women experience. For example, when women were asked to "free list" illnesses or problems that they face, anemia was commonly not mentioned in the list. Furthermore, many women feel that anemia is not serious enough to seek outside care. After all, women have socio-culturally trained themselves not to amplify mild conditions and therefore health seeking happens only when they feel distress or when they are not able to work for their wage. This behavior of seeking healthcare only when very sick leading to higher morbidity and lower life expectancy among the Malayali tribes of Javadhu hills was reported by Uma Maheswari *et al.* [11].

Does functionality impairment or the disease with which people do the activities of daily living influence health seeking behavior? Through the Karnofsky Performance Status tool, we assessed the performance of women with anemia and their ADL functionality. The results of the Karnofsky performance status further strengthened our perception about health seeking behavior with over 2/3rd of the women reported normal performance with

absolutely no functional impairment while 1/3rd reported very mild functional impairment, but they were still able to ADLs.

Conclusion

Through this study, we can conclude that anemia is not perceived to be serious to seek treatment among the women probably due multiple reasons, one being "no visible distress" while doing activities of daily living. Concerning these tribes live up in the hills, we would have to evaluate conditions like anemia with care. Furthermore, anemia mitigation strategies include fortification which has been found to be unsuccessful in Low-and-middle - income countries based on Hemoglobin levels. However, Hemoglobin (Hb) alone must not be used to monitor iron interventions, there are specific biomarkers such as serum ferritin that also need to be monitored to track iron status. There is ample evidence that regular consumption of iron-fortified foods markedly improves iron status. Along with fortification there is a need to address hemoglobinopathies, hookworm, and other nutritional deficiencies in indigenous communities to be able to address anemia comprehensively.

Another approach to preventing anemia among girls involves promoting preconception care programs that address their health and well-being starting from menarche. By implementing targeted health promotion initiatives aimed at improving overall health metrics, we can take a consolidated, comprehensive life-cycle approach to mitigate anemia.

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Authors' Contributions

Both GKV and PV conceptualized, GKV was responsible for data collection and analysis as well as writing the manuscript and PV edited.

Conflict of Interest

None

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