

**ASSESSING AWARENESS AND EFFECTIVENESS OF
ANGANWADI SCHEME FOR ADOLESCENT GIRLS IN COASTAL
AREAS OF KOLLAM DISTRICT, KERALA**

**A Dissertation submitted to the University of Kerala in Partial Fulfillment of the
Requirements for the Masters of Social Work Degree Examination**

SUBMITTED BY;

Name: AMALA LENIN

Candidate Code: LC24PSW03

Subject Code: SW 547



DEPARTMENT OF SOCIAL WORK

LOYOLA COLLEGE OF SOCIAL SCIENCES (AUTONOMOUS)

SREEKARIYAM, THIRUVANANTHAPURAM

UNIVERSITY OF KERALA

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CERTIFICATE OF APPROVAL

This is to certify that this dissertation entitled “Assessing Awareness and Effectiveness of Anganwadi Scheme for Adolescent Girls in Coastal Areas of Kollam District Kerala”.is a record of genuine work done by Ms. Amala Lenin, fourth semester Master of Social Work student of this college under my supervision and guidance and that it is hereby approved for submission.

Date: 10- 07 -2026

Thiruvananthapuram

Dr. Francina P X

Assistant professor, Department of Social Work
Loyola College of Social Sciences Sreekariyam,
Thiruvananthapuram.

Dr. Francina P X

Head, Department of Social Work
Loyola College of Social Sciences Sreekariyam,
Thiruvananthapuram

Dr. Prakash Pillai R

Principal, Loyola College of Social Sciences (Autonomous),
Thiruvananthapuram

DECLARATION

I Amala Lenin, hereby declare that the dissertation entitled " Assessing Awareness and Effectiveness of Anganwadi Scheme for Adolescent Girls in Coastal Areas of Kollam District, Kerala” is the outcome of my original research conducted during the academic year 2025–2026 under the guidance of the Department of Social Work, Loyola College of Social Sciences (Autonomous), Thiruvananthapuram.

This dissertation is submitted to the University of Kerala in partial fulfilment of the requirements for the award of the Master of Social Work (MSW) Degree. I further declare that this work has not been previously submitted, either in full or in part, for the award of any degree, diploma, fellowship, or any other academic qualification in this or any other university or institution.

Candidate Name: Amala Lenin

Place: Thiruvananthapuram

Date: 10-07-2026

Signature:

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Amala Lenin

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ABSTRACT

Adolescent girls constitute a nutritionally vulnerable population due to the rapid physical, psychological, and reproductive changes experienced during adolescence. To address nutritional deficiencies and promote health among adolescent girls, the Government of India implements the Scheme for Adolescent Girls (SAG) through Anganwadi Centres under the Integrated Child Development Services (ICDS). Despite the availability of these services, evidence suggests that inadequate awareness and poor utilization continue to affect the effectiveness of the programme. Against this background, the present study assessed the awareness and effectiveness of the Scheme for Adolescent Girls among adolescent girls residing in the coastal areas of Kollam district, Kerala.

The study adopted a quantitative research approach with a descriptive research design. A total of 60 adolescent girls aged 11–18 years were selected using probability cluster sampling. Data were collected through a structured interview schedule comprising socio-demographic characteristics, awareness of SAG, perceived effectiveness of the scheme, and challenges in accessing services. The collected data were analysed using the Statistical Package for the Social Sciences (SPSS), employing descriptive statistics, Chi-square tests, Pearson's correlation, and reliability analysis.

The findings revealed that the majority of respondents had low awareness regarding the objectives, services, and registration process of the Scheme for Adolescent Girls, although awareness that government services were provided free of cost was comparatively higher. Most respondents perceived the overall effectiveness of the scheme as moderate, while no respondent reported a high level of effectiveness. Nutritional and health outcomes also reflected moderate improvement, suggesting that the programme had a positive but limited impact. Several barriers affecting utilization were identified, including inadequate awareness, irregular participation, limited dissemination of information, and gaps in service delivery. The study further observed positive associations between awareness, programme effectiveness, and nutritional outcomes, indicating that increased awareness contributes to improved utilization and perceived programme benefits.

The study concludes that although the Scheme for Adolescent Girls has the potential to improve the nutritional and health status of adolescent girls, its effectiveness is constrained by limited awareness and inadequate utilization of services. Strengthening

awareness programmes, improving community outreach, ensuring regular service delivery, and enhancing coordination between Anganwadi workers, schools, families, and local communities are essential for improving programme effectiveness and achieving better adolescent health outcomes in coastal communities

CHAPTER 1

INTRODUCTION

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Adolescence represents a critical phase in the human life cycle, marked by rapid physical growth, psychological development, and increased nutritional requirements. The World Health Organization defines adolescence as the age group between 10 and 19 years, during which individuals experience significant biological and social transitions that influence long-term health outcomes (World Health Organization [WHO], 2014). Adequate nutrition during this period is essential not only for immediate health and development but also for future reproductive health, cognitive functioning, and overall productivity.

However, in India, a substantial proportion of adolescent girls continue to experience malnutrition, manifested in the form of anaemia, underweight, and micronutrient deficiencies (International Institute for Population Sciences [IIPS] & ICF, 2021). Anaemia, in particular, remains one of the most prevalent nutritional disorders among adolescent girls due to increased iron requirements during growth spurts and menstruation. Studies indicate that adolescent girls constitute a highly vulnerable group due to gender disparities, inadequate dietary intake, and limited access to health and nutrition services (Bhaskaram et al., 2003; Ramya, 2012). These nutritional deficiencies not only affect physical health but also lead to reduced academic performance, decreased work capacity, and increased susceptibility to infections.

Malnutrition during adolescence has far-reaching implications, particularly in perpetuating the intergenerational cycle of undernutrition. Undernourished adolescent girls are more likely to become undernourished mothers, thereby increasing the risk of low birth weight and poor health outcomes among future generations (Black et al., 2013). Despite improvements in public health indicators, the persistence of malnutrition among adolescent girls indicates significant gaps in programme implementation, awareness, and service utilization.

In response to these challenges, the Government of India has implemented several interventions aimed at improving adolescent health and nutrition. The Integrated Child Development Services is one of the largest community-based programmes providing supplementary nutrition, health check-ups, and nutrition education through Anganwadi centres. Building upon this, the Scheme for Adolescent Girls (SAG) specifically targets

girls aged 11–18 years, aiming to improve their nutritional status, enhance awareness, and promote life skills (Ministry of Women and Child Development, 2018).

More recently, initiatives such as POSHAN Abhiyaan and POSHAN 2.0 have strengthened the focus on reducing malnutrition through a convergent, multi-sectoral approach involving health, nutrition, and behavioural change communication (NITI Aayog, 2020). Within this framework, Anganwadi centres serve as the primary delivery mechanism for nutrition interventions, including the provision of supplementary food, iron and folic acid supplementation, and health education.

Despite the availability of these services, evidence suggests that programme effectiveness is not solely dependent on provision but also on awareness and utilization among beneficiaries. Studies conducted in various regions of India indicate that while services are available, their utilization remains limited due to lack of awareness, cultural preferences, irregular supply, and perceived inadequacy of food supplements (Nair et al., 2017; Negi et al., 2019). In coastal regions such as Kollam district, socio-economic conditions, dietary habits, and community perceptions may further influence programme uptake.

A recent study conducted in coastal areas of Kollam district reported a high prevalence of anaemia (75%) among adolescent girls and only moderate utilization of adolescent health services, indicating a gap between service availability and actual utilization. The study also found a positive association between service utilization and health outcomes, emphasizing the importance of improving programme reach and engagement.

Thus, while multiple interventions exist, the persistence of nutritional deficiencies among adolescent girls highlights the need to critically examine the effectiveness of such programmes in real-world settings, particularly in relation to awareness and utilization patterns.

1.2 Rationale of the Study

Although numerous government programmes have been implemented to address adolescent malnutrition, the issue continues to persist, particularly among vulnerable and marginalized populations. Existing literature suggests that a significant gap exists

between awareness and utilization of services, raising concerns about the actual effectiveness of programme implementation.

In the context of Kerala, which is often recognized for its advanced health indicators, the continued prevalence of anaemia among adolescent girls suggests underlying challenges related to dietary practices, socio-cultural factors, and programme accessibility. Coastal regions, in particular, may face additional constraints due to occupational patterns, economic limitations, and variations in community engagement.

The present study is therefore significant as it seeks to examine not only the effectiveness of the Scheme for Adolescent Girls but also the level of awareness and patterns of utilization among adolescent girls. By integrating these dimensions, the study moves beyond a purely biomedical perspective and adopts a more comprehensive approach to understanding programme outcomes.

1.3 Statement of the Problem

Malnutrition and nutritional deficiencies among adolescent girls in India persist despite the implementation of Anganwadi-based nutrition programmes. These deficiencies adversely affect physical growth, menstrual health, cognitive development, and long-term well-being. There is a need to assess whether the nutritional interventions provided through Anganwadi centres, particularly under the Scheme for Adolescent Girls, are effectively reaching the target population and meeting their intended objectives. Furthermore, understanding the level of awareness and identifying barriers to utilization are essential for improving programme effectiveness and ensuring better health outcomes.

1.4 Relevance of the Study

The relevance of the present study lies in its focus on adolescent girls as a critical population group in the public health and social development framework. While maternal and child health have received significant attention, adolescent nutrition remains relatively underexplored despite its long-term implications.

By assessing both awareness and effectiveness, the study addresses a critical gap in existing research, which often examines these aspects independently. The findings are

expected to contribute to policy formulation, programme improvement, and evidence-based interventions by identifying gaps in service delivery and utilization.

Additionally, the study holds practical significance for social workers, public health practitioners, and policymakers by providing insights into community-level factors that influence programme success. It also supports the broader objective of breaking the intergenerational cycle of malnutrition and promoting sustainable health outcomes.

1.5 Scope of the Study

The study focuses on adolescent girls residing in coastal areas of Kollam district, Kerala. It examines their awareness, utilization, and perceived effectiveness of services provided under the Scheme for Adolescent Girls through Anganwadi centres. The study also considers the influence of family and socio-cultural factors on programme participation. By situating the research within a specific geographical and socio-cultural context, the findings are expected to be both contextually relevant and practically applicable.

1.6 Conclusion

Adolescent malnutrition continues to be a significant public health challenge in India despite the presence of comprehensive nutrition programmes such as ICDS, SAG, and POSHAN initiatives. The effectiveness of these programmes is closely linked to awareness, accessibility, and utilization among beneficiaries. Therefore, a systematic assessment of these dimensions is essential to identify existing gaps and improve programme outcomes. The present study, by focusing on awareness and effectiveness of SAG among adolescent girls in coastal Kollam, seeks to contribute to the broader goal of improving adolescent health and ensuring equitable access to nutrition services.

CHAPTER 2

REVIEW OF LITERATURE

CHAPTER 2: REVIEW OF LITERATURE

2.1 Introduction

The nutritional status, health awareness, and service utilization patterns of adolescent girls have been widely recognized as critical determinants of long-term public health outcomes. In India, programmes such as the Supplementary Nutrition Programme (SNP) under the Integrated Child Development Services (ICDS) and the Scheme for Adolescent Girls (SAG) aim to address issues of malnutrition, anaemia, and limited health awareness among adolescent girls. However, the effectiveness of these interventions depends not only on the biomedical adequacy of the services but also on the levels of awareness and utilization among beneficiaries. This section critically reviews relevant empirical studies focusing on nutritional interventions, awareness levels, and utilization of adolescent health services, particularly within the Indian and Kerala context.

2.2 Nutritional Status and Effectiveness of Supplementary Interventions

A substantial body of research has examined the nutritional deficiencies prevalent among adolescent girls and the effectiveness of supplementation strategies. Integrated Child Development Services and related interventions have been central to addressing these concerns.

Ramya (2012) conducted a study among 240 adolescent girls in Kottayam district, Kerala, which revealed a high prevalence of anaemia (57%). The study further demonstrated that supplementation with iron and folic acid fortified biscuits over a period of three months led to significant improvements in haemoglobin levels as well as iron and folate status. These findings highlight the biomedical effectiveness of targeted nutritional interventions in improving adolescent health outcomes.

Similarly, Bhaskaram et al. (2003) examined the impact of multiple micronutrient supplementation among adolescent girls aged 10–16 years in Jaipur. The study reported improvements in vitamin A levels and a reduction in micronutrient deficiencies after four months of intervention. The results reinforce the importance of micronutrient supplementation as a strategy to combat undernutrition among adolescents.

However, while these studies demonstrate the efficacy of supplementation, they primarily focus on controlled interventions rather than programme-based service delivery. Singh et

al. (2007), in their assessment of dietary intake among adolescent girls under ICDS in North India, identified significant inadequacies in energy, iron, folate, and vitamin A intake. The study concluded that the supplementary nutrition provided through ICDS was insufficient both in quality and diversity. This raises critical concerns regarding the actual effectiveness of existing government programmes in meeting the nutritional needs of adolescent girls.

2.3 Awareness of Adolescent Health and Nutrition Programmes

Awareness plays a pivotal role in determining the success of public health interventions. Several studies have highlighted the low levels of awareness among adolescent girls regarding nutrition and health programmes.

Jose and Antony (2020) examined awareness of the Weekly Iron and Folic Acid Supplementation (WIFS) programme among tribal adolescent girls in Wayanad district, Kerala. The findings revealed that nearly 80% of respondents were unaware of the programme. Importantly, girls who lacked awareness were more likely to be anaemic, suggesting a direct linkage between awareness and health outcomes.

Similarly, Meshram et al. (2019) reported extremely low awareness levels (less than 3%) of adolescent health programmes among tribal girls in Maharashtra. The study emphasized that such low awareness significantly limits programme reach and effectiveness.

Kumar et al. (2012) assessed awareness and utilization of Kishori Shakti Yojana services among adolescent girls in Karnataka and found that only one-third of the respondents were aware of the programme. The study highlighted systemic issues in information dissemination and outreach mechanisms.

These studies collectively indicate that despite the presence of multiple government initiatives, awareness among adolescent girls remains inadequate. This gap undermines the potential benefits of these programmes and points to the need for stronger communication and community engagement strategies.

2.4 Utilization of Anganwadi and Adolescent Health Services

Beyond awareness, actual utilization of services is a crucial indicator of programme effectiveness. Studies examining the use of Anganwadi services reveal significant gaps between awareness and utilization.

Negi et al. (2019) found that only 7% of adolescent girls in Rishikesh, Uttarakhand, had visited Anganwadi centres in the previous year. The study identified barriers such as lack of awareness, irregular supply of services, and poor alignment with adolescent needs. These findings suggest that service delivery mechanisms may not be adequately tailored to the target population.

In a similar context, Nair et al. (2017) reported that although awareness of Anganwadi centres was relatively high in rural Kerala, only 9% of adolescent girls utilized supplementary food services. This indicates a clear disconnect between knowledge of services and their actual usage.

These findings are consistent with Kumar et al. (2012), who also observed low utilization rates of adolescent-focused services. The recurring pattern across studies suggests that structural, social, and programmatic barriers continue to hinder effective service utilization.

2.5 Evidence from Coastal Kerala Context

Context-specific studies provide important insights into localized challenges. A study titled *“Prevalence of Anaemia and Utilization of Adolescent Health Services under RMNCH+A among Adolescent Girls at Selected Coastal Areas of Kollam District”* conducted by Sreeja and Sheeja highlights the dual burden of high anaemia prevalence and low utilization of health services among adolescent girls in coastal regions.

The study emphasizes that despite the availability of services under the RMNCH+A [Reproductive, Maternal, Newborn child and adolescent Health + A] Strategy framework, utilization remains suboptimal. Factors such as socio-economic constraints, limited awareness, and accessibility issues were identified as key determinants influencing service uptake. This is particularly relevant for coastal communities, where cultural practices, occupational patterns, and geographical factors may further shape health behaviours.

2.6 Theoretical Framework

A theoretical framework provides the conceptual foundation for a study by identifying the theories that help explain the phenomenon under investigation. In the present study, which assesses the awareness and effectiveness of the Scheme for Adolescent Girls (SAG) among adolescent girls in the coastal area of Kollam district, Kerala, the theoretical framework is essential for understanding how awareness is formed, how health and nutrition-related behaviour is influenced, and how programme effectiveness may be interpreted within a community setting. Since the study deals with adolescent health behaviour, awareness of services, and utilization of programme benefits delivered through Anganwadi centres, the framework must account for both individual-level and contextual influences. Therefore, the present study is guided by the **Health Belief Model** and the **Social Ecological Model**. These theories are particularly relevant because they help explain the relationship between awareness, perceived need, service utilization, and the broader social environment in which adolescent girls experience health and nutrition programmes.

2.6.1 Health Belief Model

The Health Belief Model (HBM) is one of the most widely used behavioural theories in public health for explaining and predicting health-related behaviours. The model was originally developed by Rosenstock (1966) and was later expanded by Becker (1974). It proposes that an individual's decision to adopt a health behaviour is influenced by personal beliefs regarding health conditions, perceived benefits of taking action, perceived barriers to action, cues that trigger behaviour, and confidence in performing the behaviour (self-efficacy). The model consists of six major constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

In the context of the present study, the Health Belief Model provides an appropriate framework for understanding how adolescent girls perceive and utilize the services provided under the Scheme for Adolescent Girls (SAG) through Anganwadi Centres. The model explains that awareness alone may not necessarily result in the utilization of programme services. Rather, adolescent girls are more likely to participate in the scheme when they believe that they are vulnerable to nutritional deficiencies and health problems (perceived susceptibility), recognize the seriousness of these health issues (perceived

severity), understand that the services offered under SAG can improve their nutritional and health status (perceived benefits), and perceive fewer obstacles to accessing these services (perceived barriers).

Within the present study, perceived susceptibility refers to the extent to which adolescent girls recognize their risk of malnutrition, anaemia, poor menstrual health, and other health-related problems common during adolescence. Perceived severity relates to their understanding of the consequences of these conditions on their physical growth, educational performance, reproductive health, and overall well-being. When adolescent girls acknowledge both their susceptibility and the seriousness of these problems, they may be more inclined to seek preventive and promotive health services.

The construct of perceived benefits is reflected in the respondents' beliefs regarding the usefulness of the Scheme for Adolescent Girls. If adolescent girls believe that supplementary nutrition, Iron and Folic Acid supplementation, health education, nutrition counselling, and life-skill education provided through Anganwadi Centres can improve their health and nutritional status, they are more likely to participate actively in the programme. In contrast, perceived barriers include factors that discourage utilization of the scheme, such as lack of awareness regarding available services, dissatisfaction with supplementary nutrition, inadequate information, irregular service delivery, inconvenient programme timings, and limited follow-up by Anganwadi workers. These barriers may reduce programme participation despite the availability of services.

The model also emphasizes the importance of cues to action, which are external or internal factors that motivate individuals to adopt health-related behaviours. In the present study, cues to action may include awareness campaigns conducted through Anganwadi Centres, health education sessions, guidance provided by Anganwadi workers, encouragement from parents and teachers, school-based health programmes, peer influence, and community awareness activities. Such cues can motivate adolescent girls to register under the scheme and utilize the available services.

Another important component of the Health Belief Model is self-efficacy, which refers to an individual's confidence in performing a particular behaviour. In relation to the present study, self-efficacy reflects the confidence of adolescent girls in accessing Anganwadi Centres, participating in health education programmes, consuming supplementary

nutrition regularly, following nutritional advice, and utilizing other services available under the Scheme for Adolescent Girls. Higher self-efficacy may encourage sustained participation and greater utilization of programme benefits.

The Health Belief Model is therefore highly relevant to the present study because it provides a conceptual explanation of how awareness influences perceptions, how these perceptions affect the utilization of SAG services, and how programme effectiveness is shaped by both perceived benefits and perceived barriers. The model helps explain why some adolescent girls actively utilize Anganwadi services while others do not, despite the availability of similar services within the same community. By applying this framework, the present study examines awareness not merely as knowledge about the scheme but as an important determinant influencing service utilization and the overall effectiveness of the Scheme for Adolescent Girls among adolescent girls in the coastal areas of Kollam district, Kerala.

2.6.2 Social Ecological Model

The Social Ecological Model explains human behaviour as the result of interaction between the individual and the multiple environmental systems in which the individual is embedded. The model is rooted in ecological systems thinking and emphasizes that behaviour is not shaped by personal factors alone but also by interpersonal, organizational, community, and policy level influences (Bronfenbrenner, 1979; McLeroy et al., 1988). At the individual level, behaviour is influenced by knowledge, beliefs, age, and attitudes. At the interpersonal level, relationships with parents, siblings, peers, and teachers play a significant role. At the organizational level, institutions such as schools, Anganwadi centres, and health systems affect access to services and information. At the community level, cultural practices, gender norms, and social expectations shape patterns of acceptance and participation. At the policy level, government programmes, administrative support, and implementation systems determine the reach and quality of interventions.

This model is directly connected to the present study because awareness and effectiveness of SAG cannot be understood only at the level of the individual adolescent girl. The awareness of adolescent girls about Anganwadi services is often influenced by their mothers, family members, Anganwadi workers, school environment, and peer networks.

Similarly, effectiveness depends not only on whether the adolescent girl knows about the programme, but also on whether the programme is accessible, acceptable, regularly implemented, and socially supported within the community. In a coastal area such as Kollam district, local socioeconomic conditions, food habits, educational background of parents, and community perceptions regarding government services may significantly shape both awareness and utilization. The Social Ecological Model is therefore important because it helps situate adolescent girls' experiences within a broader context and explains how multiple levels of influence operate together in determining the effectiveness of the Scheme for Adolescent Girls.

2.6.3 Relevance of the Theoretical Framework to the Present Study

The combined use of the Health Belief Model and the Social Ecological Model strengthens the analytical foundation of the study. The Health Belief Model is useful in understanding how adolescent girls' perceptions, beliefs, and level of awareness influence their willingness to access and benefit from SAG services. The Social Ecological Model expands this understanding by showing that these beliefs and behaviours are shaped by family, community, institutional structures, and implementation systems. Together, these theories help explain why a government nutrition and health scheme may not achieve the desired level of effectiveness even when services are formally available. They also support the study in examining whether lack of awareness, poor service utilization, social environment, and implementation gaps are affecting the effectiveness of the scheme among adolescent girls in the coastal area of Kollam district. Hence, these theories provide a relevant and comprehensive conceptual base for the present research.

2.6 Research Gap

The review of literature indicates that previous studies have largely focused on three distinct dimensions: the biomedical effectiveness of nutritional interventions, the levels of awareness regarding adolescent health programmes, and the utilization patterns of services. However, these aspects have often been examined in isolation.

There is a noticeable lack of integrated studies that simultaneously assess awareness, effectiveness, and utilization within a single analytical framework. Furthermore, while several studies have been conducted in different parts of India, there is limited empirical

evidence focusing specifically on the effectiveness of Anganwadi-based interventions for adolescent girls in coastal areas of Kerala, particularly in Kollam district.

Contextual factors such as cultural food practices, accessibility of Anganwadi centres, community perceptions, and socio-economic conditions remain underexplored. These factors are likely to influence both awareness and utilization, thereby affecting overall programme effectiveness.

Therefore, the present study seeks to address this gap by providing a comprehensive assessment of awareness and effectiveness of the Scheme for Adolescent Girls (SAG) among adolescent girls in the coastal areas of Kollam district, integrating multiple dimensions within a unified analytical framework.

2.7 Conclusion

Based on the literature reviewed in this chapter, it is evident that adolescent girls continue to face significant nutritional and health-related challenges despite the existence of government interventions such as the Scheme for Adolescent Girls (SAG), Integrated Child Development Services (ICDS), and related nutrition programmes. Previous studies have consistently demonstrated the effectiveness of nutritional supplementation in improving health outcomes; however, they also reveal persistent deficiencies in awareness, accessibility, and utilization of programme services. The literature further indicates that social, cultural, and institutional factors play an important role in influencing the success of these interventions. The Health Belief Model and the Social Ecological Model provide a strong theoretical foundation for understanding how individual perceptions and broader environmental influences shape programme awareness and utilization. Moreover, the review identifies a significant research gap in the limited number of studies that comprehensively examine awareness, utilization, and effectiveness of the Scheme for Adolescent Girls within the coastal context of Kerala, particularly in Kollam district. Therefore, the present study seeks to address this gap by assessing the awareness and effectiveness of the Scheme for Adolescent Girls among adolescent girls in the coastal area of Kollam district, thereby contributing context-specific evidence to strengthen programme implementation and adolescent health outcomes.

CHAPTER 3

METHODOLOGY

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter presents the methodological framework adopted for the present study titled *“Assessing Awareness and Effectiveness of Anganwadi Scheme for Adolescent Girls (SAG) among Adolescent Girls in Coastal Area of Kollam District, Kerala.”* It outlines the systematic procedures followed for data collection, sampling, analysis, and ethical considerations. The methodology is designed to ensure scientific rigor, reliability, and validity in examining the awareness, effectiveness, and utilization of the Scheme for Adolescent Girls among adolescent girls in the selected study area.

3.2 Title of the Study

Assessing Awareness and Effectiveness of Anganwadi Scheme for Adolescent Girls (SAG) among Adolescent Girls in Coastal Area of Kollam District, Kerala

3.3 Objectives of the Study

General Objective

To assess the awareness and effectiveness of the Scheme for Adolescent Girls (SAG) among adolescent girls in coastal areas of Kollam district.

Specific Objectives

1. To evaluate the effectiveness of the Scheme for Adolescent Girls in improving the nutritional and health status of adolescent girls.
2. To examine the level of awareness among adolescent girls regarding the availability and benefits of SAG.
3. To identify barriers and challenges faced by adolescent girls in accessing or utilizing Anganwadi services.
4. To suggest measures for strengthening awareness, accessibility, and effectiveness of SAG among adolescent girls.

3.4 Definition of Concepts

Table 3.4.1: Theoretical and Operational Definitions

Concept	Theoretical Definition	Operational Definition
Awareness	Awareness refers to the state of being informed and having knowledge about a particular programme or issue (Glanz, Rimer, & Viswanath, 2008).	Awareness refers to the level of knowledge among adolescent girls regarding the objectives, services, benefits, and functioning of SAG measured through structured questionnaire responses.
Effectiveness	Effectiveness is the extent to which a programme achieves its intended outcomes under real-life conditions (Rossi, Lipsey, & Freeman, 2004).	Effectiveness refers to the perceived improvement in nutritional status, health condition, and well-being of adolescent girls due to SAG
Utilization	Utilization refers to the extent to which services are accessed and used by the target population (Andersen, 1995).	Utilization refers to the frequency and extent of use of Anganwadi services such as food kits, health services, and awareness programmes by adolescent girls.
Challenges	Challenges refer to barriers that hinder access to or use of services (Rogers, 2003).	Challenges refer to difficulties faced by adolescent girls in

	Challenges refer to barriers that hinder access to or use of services (Rogers, 2003).	accessing or benefiting from SAG services
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3.5 Pilot Study

A pilot study was conducted prior to the main data collection to assess the feasibility, clarity, and reliability of the research instrument. The pilot study was carried out among **5 adolescent girls** from a similar setting outside the selected study area.

Prior permission was obtained from the concerned authorities, and participants were selected based on inclusion criteria. The pilot study helped to:

- Identify ambiguity in questions
- Assess clarity and understanding
- Estimate time required for data collection
- Improve reliability of the tool

Based on the findings, necessary modifications were made to the questionnaire to enhance clarity and appropriateness.

3.6 Research Approach

The present study adopts a **quantitative research approach**. According to John W. Creswell (2018), quantitative research involves the systematic investigation of phenomena through numerical data collection and statistical analysis.

This approach is appropriate for the present study as it enables the researcher to:

- Measure awareness and effectiveness objectively
- Quantify patterns of utilization
- Analyze relationships between variables

- Ensure generalizability of findings

3.7 Research Design

The study employs a **descriptive research design**. Descriptive research is used to describe characteristics of a population or phenomenon without manipulating variables.

This design is suitable because the study aims to:

- Assess existing levels of awareness
- Evaluate programme effectiveness
- Identify challenges faced by beneficiaries

3.8 Universe of the Study

The universe of the study consists of **all adolescent girls aged 11–18 years residing in the coastal areas of Kollam district, Kerala**, who are eligible beneficiaries of the Scheme for Adolescent Girls.

3.9 Sampling Design

Sampling Technique

The study adopts a **probability sampling method, specifically cluster sampling**.

In this study, coastal areas of Kollam district were divided into clusters based on geographical or administrative units (such as wards or Anganwadi centres). From these clusters, selected clusters were chosen, and adolescent girls within those clusters were included as respondents.

Cluster sampling is appropriate because:

- The population is geographically dispersed
- It ensures better representation of coastal communities
- It is feasible and cost-effective

Sample Size

A total of **60 adolescent girls** were selected as the sample for the study.

3.10 Inclusion and Exclusion Criteria

Inclusion Criteria

- Adolescent girls aged between 11–18 years
- Residents of selected coastal areas of Kollam district
- Beneficiaries or eligible under SAG
- Willing to participate in the study

Exclusion Criteria

- Adolescents outside the specified age group
- Non-residents of selected clusters
- Those unwilling to participate
- Those with severe illness during data collection

3.11 Data Collection

Data were collected using a **structured interview schedule** specifically designed for the study. The tool consisted of four sections:

- **Section A:** Socio-demographic profile
- **Section B:** Awareness of SAG
- **Section C:** Effectiveness of SAG
- **Section D:** Challenges and barriers in accessing services
- **Section E:** Suggestions for Improving SAG

The tool was administered through **face-to-face interaction** to ensure accuracy and clarity of responses.

Data collection was carried out after obtaining necessary permissions from local authorities and Anganwadi centres. The purpose of the study was clearly explained to participants prior to data collection.

3.12 Data Analysis

The collected data were coded and analysed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarise the data.

The results were presented using tables and charts for clarity and interpretation.

3.13 Ethical Considerations

Ethical principles were strictly followed throughout the study. Participation was voluntary, and informed consent was obtained from all participants. The purpose of the study was clearly explained prior to data collection.

Confidentiality and anonymity of respondents were ensured. Data were handled with strict confidentiality, stored securely, and used solely for academic purposes. Participants were assured that their identities would not be disclosed in any reports or publications.

3.14 Assumptions, Limitations, and Scope

Assumptions

- Respondents provided honest and accurate responses
- Participants had basic understanding of the questions
- Anganwadi services were available in selected areas

Limitations

- Study limited to selected coastal areas of Kollam district
- Self-reported data may involve response bias

- Time constraints limited the sample size

Scope of the Study

The study focuses on assessing awareness, effectiveness, and utilization of SAG among adolescent girls in coastal Kollam. The findings are expected to contribute to programme improvement, policy planning, and social work interventions in adolescent health and nutrition.

3.15 Conclusion

This chapter has outlined the methodological framework adopted for the present study on assessing the awareness and effectiveness of the Scheme for Adolescent Girls (SAG) among adolescent girls in the coastal areas of Kollam district. It described the research approach, design, sampling procedure, study population, data collection instrument, and methods of data analysis, along with the ethical principles followed throughout the research process. The methodology was carefully designed to ensure the collection of reliable, valid, and relevant data that address the objectives of the study. The use of a structured interview schedule, probability cluster sampling, and quantitative analysis through SPSS provides a systematic basis for examining the awareness, effectiveness, utilization, and challenges associated with SAG. The following chapter presents the analysis and interpretation of the data collected from the respondents, highlighting the major findings in relation to the objectives of the study.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

CHAPTER 4: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The present chapter presents a comprehensive analysis and interpretation of data collected from 60 adolescent girls residing in the coastal area of Kollam/Thiruvananthapuram district, Kerala, for the study titled "Assessing Awareness and Effectiveness of the Scheme for Adolescent Girls (SAG) Implemented through Anganwadi Centres among Adolescent Girls." The data were collected using a structured, self-administered questionnaire comprising five sections: Section A (Socio-demographic profile), Section B (Awareness of SAG scheme), Section C (Nutritional and health outcomes), Section D (Effectiveness of Anganwadi services), and Section E (Challenges and barriers in accessing services).

The data were analysed using IBM SPSS Statistics. Descriptive statistics including frequencies, percentages, means, and standard deviations were computed to summarise responses. Inferential statistics included Chi-square tests of independence, Pearson's correlation coefficient, and Spearman's rank correlation to examine associations and relationships between variables. Composite scores were computed for each scale and categorised into interpretable levels. The reliability of the instrument was established using Cronbach's Alpha prior to analysis. All analyses are presented objective-wise using appropriate tables, with detailed interpretation following each table.

4.2 Reliability of the Research Instrument

Prior to conducting the primary analysis, the internal consistency of each section of the questionnaire was assessed using Cronbach's Alpha coefficient. Cronbach's Alpha values of 0.70 and above are conventionally considered acceptable for research purposes, while values between 0.60 and 0.70 are regarded as marginal but acceptable, particularly in exploratory studies.

Table 4.1: Reliability Statistics of the Research Instrument by Scale

Scale / Section	Items	N	Cronbach's Alpha	Interpretation
Section B – Awareness (B1–B10)	10	59	0.721	Acceptable
Section C – Nutritional & Health Outcomes (C1– C5)	5	60	0.684	Marginal/Acceptable
Section D – Effectiveness of Services (D1–D14)	14	60	0.778	Acceptable
Section E – Challenges and Barriers (E1–E19)	19	60	0.813	Good
Full Instrument (All Sections)	57	59	0.670	Marginal/Acceptable

Note: Scale reliability assessed using Cronbach's Alpha. Values ≥ 0.70 indicate acceptable; $<$

0.70 indicates marginal/acceptable for exploratory studies.

As presented in Table 4.1, the Awareness scale (Section B, 10 items) yielded a Cronbach's Alpha of 0.721, indicating acceptable internal consistency. The Nutritional Outcomes scale (Section C, 5 items) returned a value of 0.684, which, while slightly below the conventional threshold of 0.70, is considered acceptable for an exploratory investigation of this nature. The Effectiveness of Services scale (Section D, 14 items) demonstrated good internal reliability with an Alpha of 0.778, and the Challenges and Barriers scale (Section E, 19 items) achieved the highest reliability at 0.813, indicating good internal consistency. The overall instrument, comprising 57 items across all sections, returned a Cronbach's Alpha of 0.670, which is marginal but acceptable given the multi-dimensional and heterogeneous nature of the constructs measured. These results confirm that the research instrument is sufficiently reliable for the purposes of this study.

4.2 Socio-Demographic Characteristics of Respondents

Table 4.2: Socio-Demographic Profile of Respondents (N = 60)

Variable/Category	Frequency(N)	Percentage (%)	Cumulative (%)
AGE			
10-12 years	5	8.3%	8.3%
13-15 years	32	53.3%	61.7%
16-18 years	23	38.5%	100.0%

Table 4.2 presents the age-wise distribution of the respondents. Out of the total 60 respondents, more than half (53.3%, n= 32) belonged to the age group of 13–15 years, making it the largest age category in the study. This was followed by 38.3% (n = 23) of respondents in the 16–18 years age group, while only 8.3% (n = 5) were between 10–12 years of age. The cumulative percentage indicates that 61.7% of the respondents were aged 15 years or below whereas the remaining 38.3% were aged 16–18 years. The findings suggest that the majority of the respondents were in the middle adolescent age group, which represents the primary target population for assessing awareness and effectiveness of the Scheme for Adolescent Girls (SAG).

Table 4.3: Caste- wise Distribution

OBC	2	33%	
OEC	59	98%	
General	1	1.7%	

Table 4.3 presents the caste-wise distribution of the respondents. Among the total 60 respondents, the overwhelming majority 98.3% (n = 59) belonged to the Other Eligible Community (OEC) category, while only 1.7% (n = 1) belonged to the General category. The cumulative percentage indicates that almost the entire study population consisted of

respondents from the OEC category. This distribution reflects the socio-demographic composition of the selected coastal study area and suggests that the findings predominantly represent adolescent girls belonging to the OEC community.

Fig 4.1: Caste-wise Distribution

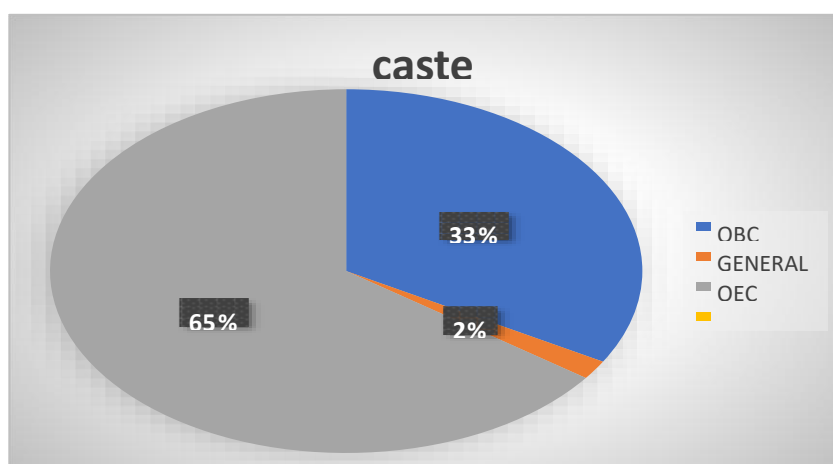


Table 4.4 Religion-wise Distribution

Christian	53	88.3%	88.3%
Hindu	7	11.7%	100.0%

Table 4.4 presents the religion-wise distribution of the respondents. Out of the total 60 respondents, the majority 88.3% (n = 53) belonged to the Christian religion, while 11.7% (n = 7) were Hindus. The cumulative percentage indicates that the study population was predominantly Christian. This distribution reflects the religious composition of the selected coastal study area and suggests that the findings primarily represent adolescent girls from the Christian community.

Fig 4.2: Religion-wise Distribution

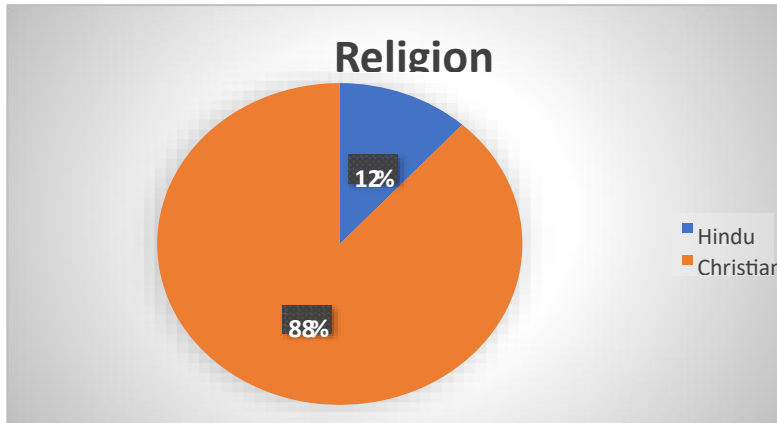


Table 4.5: Type of Family

Nuclear	58	96.7%	96.7%
Joint	2	3.3%	100.0%

Fig 4.3: Type of Family

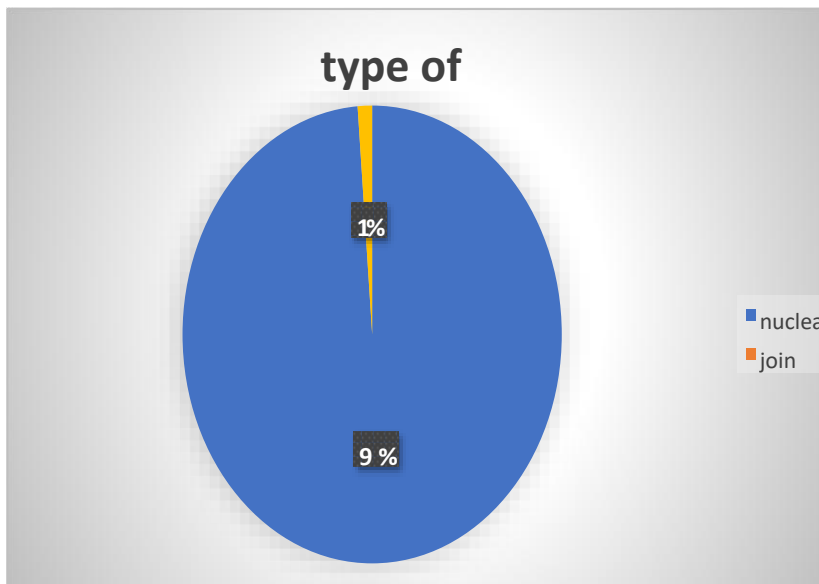


Table 4.5 shows the distribution of respondents based on the type of family. Out of the total 60 respondents, the majority (58; 96.7%) belonged to nuclear families, while only 2 respondents (3.3%) belonged to joint families. This indicates that most of the adolescent girls in the study were from nuclear family settings, reflecting the predominance of nuclear families in the selected coastal area of Kollam district.

Table 4.6: Number of Family Members

1- 3 members	4	6.7%	6.7%
4-6 members	53	88.3%	95.0%
Above 6 members	3	5.0%	100.0%

Table 4.6 presents the distribution of respondents based on the number of family members. The majority of the respondents (53; 88.3%) belonged to families comprising 4–6 members. A small proportion (4; 6.7%) belonged to families with 1–3 members, while only 3 respondents (5.0%) belonged to families with more than six members. This indicates that most of the adolescent girls in the study were from medium-sized families consisting of four to six members.

Table 4.7 Monthly Household Income

Below 10,000	2	3.3%	3.3%
10,000 – 20,000	46	76.7%	80.0%
20,001- 30,000	12	20.0%	100.0%

Table 4.7 presents the distribution of respondents based on their monthly household income. The majority of the respondents (46; 76.7%) belonged to households with a monthly income of ₹10,000–₹20,000. About 12 respondents (20.0%) reported a monthly household income of ₹20,001–₹30,000, while only 2 respondents (3.3%) had a monthly income below ₹10,000. The findings indicate that most of the respondents belonged to low- to middle-income households.

Fig 4.4 Monthly Household Income

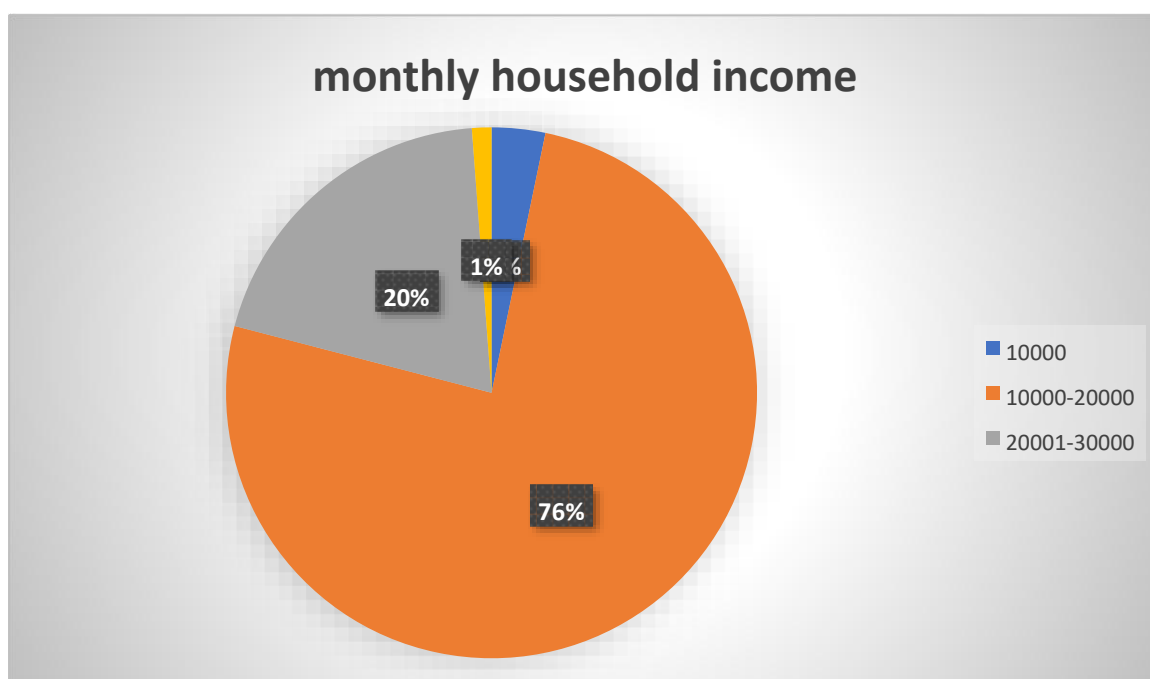


Table 4.8 Registration Status of Anganwadis

Yes	45	75.0%	75.0%
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No	12	20.0%	95.0%
Don't Know	3	5.0%	100.0%

The table 4.8 presents the distribution of respondents based on their registration status at the Anganwadi Centre. The majority of the respondents (45; 75.0%) reported that they were registered at an Anganwadi Centre. In contrast, 12 respondents (20.0%) stated that they were not registered, while 3 respondents (5.0%) were unaware of their registration status. The findings indicate that most of the adolescent girls were registered beneficiaries of the Anganwadi Centre, suggesting a relatively good level of programme coverage in the study area.

Fig 4.5 Registration Status of Anganwadi

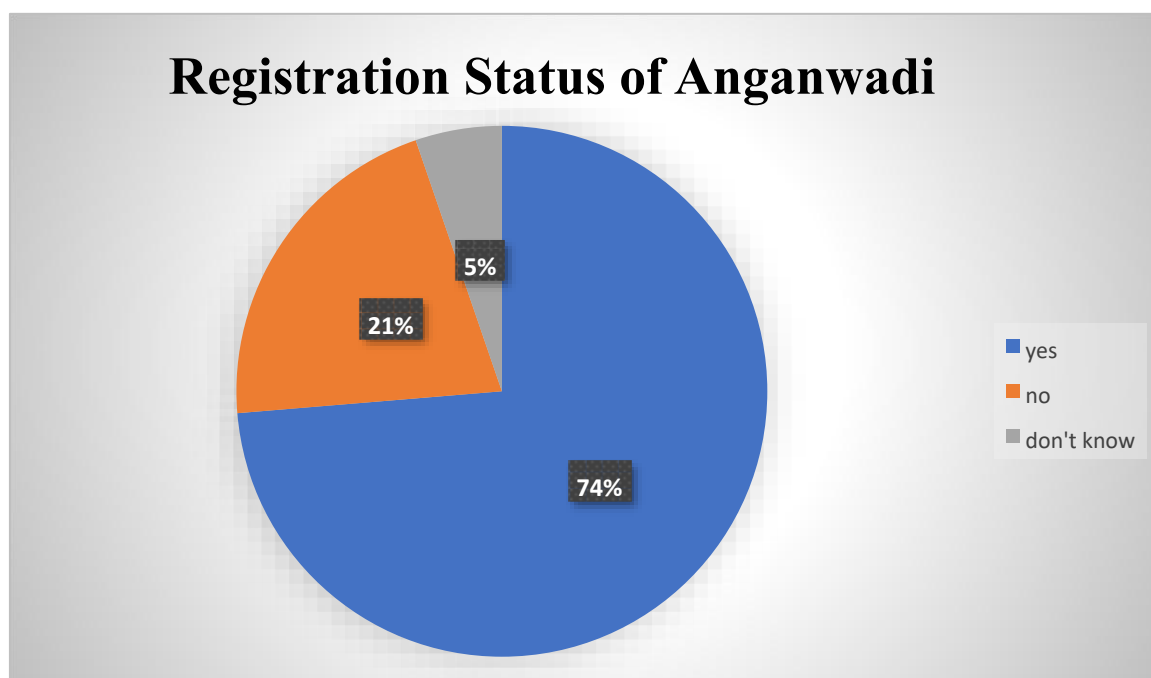


Table 4.9: Education Status

School going1	100%1	100%
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Table 4.9 presents the distribution of respondents based on their educational status. It shows that all the respondents (60; 100.0%) were school-going adolescent girls. This indicates that the entire study sample comprised adolescents who were currently attending school, ensuring that the study focused exclusively on school-going beneficiaries of the Scheme for Adolescent Girls (SAG).

Table 4.10: Place of Residence

Coastal	60	100.0%	100.0%
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Table 4.10 presents the distribution of respondents based on their place of residence. It shows that all the respondents (60; 100.0%) were residents of coastal areas. This indicates that the study was exclusively conducted among adolescent girls living in the coastal region of Kollam district, which is consistent with the objectives and scope of the study.

Table 4.11 Attained menarche

Total	60	100%
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Note: N = 60. All percentages are based on valid responses; no missing values were recorded.

Age Distribution: The data revealed that the majority of respondents (53.3%, n=32) were in the 13–15 years age group, followed by the 16–18 years group (38.3%, n=23). Only a small proportion of respondents (8.3%, n=5) belonged to the 10–12 years age group. This distribution reflects the expected concentration of adolescent girls in the middle and older adolescent age bands within the study area.

Caste: An overwhelming majority of respondents (98.3%, n=59) belonged to the Other Eligible Community (OEC) category, with only one respondent (1.7%) belonging to the General category. The predominance of OEC reflects the socio-economic composition of the coastal fishing community in the study area. No respondents from SC or ST categories were identified, which is consistent with the demographic profile of this specific locality.

Religion: The sample was predominantly Christian (88.3%, n=53), with 11.7% (n=7) identifying as Hindu. This distribution is characteristic of coastal communities in southern

Kerala, where the Christian community has a historically strong presence. No Muslim respondents were identified in this sample.

Type of Family: Nearly all respondents (96.7%, n=58) belonged to nuclear families, with only two respondents (3.3%) from joint families. This near-universal pattern of nuclear family structure is consistent with contemporary household trends in urban and semi-urban coastal areas of Kerala.

Number of Family Members: The majority of respondents (88.3%, n=53) resided in families of 4–6 members, followed by those in families of 1–3 members (6.7%, n=4) and above 6 members (5.0%, n=3).

Monthly Household Income: The majority of respondents (76.7%, n=46) fell within the ₹10,001–20,000 monthly income bracket, indicating a predominantly lower-middle income sample. An additional 20.0% (n=12) reported incomes between ₹20,001–30,000, while only 3.3% (n=2) were below ₹10,000. This income distribution suggests that while the sample is not in extreme poverty, many families remain within the lower-middle economic tier, indicating continued relevance of government welfare schemes such as the SAG.

Registration at Anganwadi Centre: Three-fourths of the respondents (75.0%, n=45) reported being registered at the Anganwadi centre, while 20.0% (n=12) were not registered. An additional 5.0% (n=3) were uncertain about their registration status. The finding that approximately one in four adolescent girls had either not registered or was unaware of her status is a noteworthy concern with direct implications for service access.

Education Status, Place of Residence, and Menarche: All 60 respondents (100%) were currently attending school, resided in coastal areas, and had attained menarche. The homogeneity on these variables confirms the eligibility criteria of the study population as adolescent girls registered within or residing in the Anganwadi catchment area.

4.4 Awareness of the SAG Scheme among Adolescent Girls

This section addresses Objective 1: To assess the level of awareness about the SAG scheme among adolescent girls. Awareness was measured at two levels — a single global awareness item (B1) and a composite awareness score across ten items (B1–B10).

Table 4.13: Distribution of Respondents by Global Awareness of Anganwadi Services for Adolescent Girls (Item B1)

Level of Awareness	Frequency	Percent	Valid Percent	Cumulative %
Not at all aware	38	63.3%	63.3%	63.3%
Slightly aware	14	23.3%	23.3%	86.7%
Moderately aware	8	13.3%	13.3%	100.0%
Very aware	0	0.0%	0.0%	—
Extremely aware	0	0.0%	0.0%	—
Total	60	100.0%	100.0%	

Note: Responses were recorded on a 5-point scale: 1=Not at all aware, 2=Slightly aware, 3=Moderately aware, 4=Very aware, 5=Extremely aware. N=60.

Table 4.13 presents the distribution of self-reported global awareness of Anganwadi services for adolescent girls on a single-item 5-point scale. The findings are striking and concern-raising: 63.3% of respondents (n=38) reported being "not at all aware" of Anganwadi services for adolescent girls, and an additional 23.3% (n=14) reported only "slight awareness." Only 13.3% (n=8) reported being moderately aware. Crucially, not a single respondent reported being "very aware" or "extremely aware" of such services. Taken together, this indicates that 86.7% of the respondents — more than five out of every six adolescent girls — possessed little to no awareness of Anganwadi SAG services in their locality. This is a significant finding that reflects major gaps in outreach, information dissemination, and community communication by implementing agencies.

4.5 Composite Awareness Level

The composite awareness score was computed by summing responses across all ten awareness items (B1–B10) on a scale where each item was rated 1 to 5. The total possible score ranged from 10 to 50. Scores were categorised into three levels: Low (10–16.5), Moderate (16.6–33.5), and High (33.6–50).

Table 4.14: Distribution of Respondents by Composite Awareness Level

Item	Statement	Mean	SD	Level
B1	Awareness of Anganwadi services for adolescent girls	1.50	0.72	Low
B2	Awareness of the Scheme for Adolescent Girls (SAG)	1.05	0.22	Low
B3	Primary objective: improving nutritional/health status	1.65	0.61	Low
B4	Scheme aims to create health and hygiene awareness	1.71	0.67	Low-Moderate
B5	Scheme focuses on empowering girls through life skills	1.33	0.54	Low
B6	Supplementary nutrition is provided under the scheme	2.68	0.85	Moderate
B7	Regular health check-ups conducted for beneficiaries	1.87	0.68	Low-Moderate
B8	Nutrition and health education sessions are provided	1.67	0.75	Low-Moderate
B9	Services under the scheme are provided free of cost	3.60	1.04	Moderate-High

B10	Awareness of the registration process at AWC	1.25	0.54	Low
	Overall Awareness Scale Mean	18.28 (total)	3.70	Moderate

Note: Items rated on a 5-point scale (1=Not at all aware to 5=Extremely aware).

Mean score calculated for each item; N=60.

Table 4.14 presents the mean and standard deviation for each item of the Awareness scale. The data reveal considerable variation across items. B9 — "Services under the scheme are provided free of cost" — obtained the highest mean score ($M=3.60$, $SD=1.04$), suggesting that the free-of-cost nature of Anganwadi services was the most widely known attribute among respondents. This may reflect general community awareness of government welfare schemes rather than specific knowledge of the SAG.

B6 — "Supplementary nutrition is provided under the scheme" — was the second highest ($M=2.68$, $SD=0.85$), indicating that nutrition provision was more widely recognised. In contrast, B2 — "Awareness of the SAG scheme specifically" — returned the lowest mean ($M=1.05$, $SD=0.22$), followed by B10 — "Awareness of the registration process" — ($M=1.25$, $SD=0.54$), indicating near-total ignorance of scheme-specific information among respondents. Items B1, B3, B4, B5, B7, and B8 all returned means below 2.00, confirming very low awareness across the specific service components of the SAG scheme. These findings underscore that while awareness of the broad welfare principle (free government services) exists, scheme-specific knowledge — including objectives, eligibility, and services — is critically absent.

4.5 Effectiveness of Anganwadi SAG Services

This section addresses Objective 2: To evaluate the effectiveness of the Anganwadi SAG scheme in improving the nutritional and health status of adolescent girls. Effectiveness was assessed through 14 items (D1–D14) covering service utilisation, health knowledge, hygiene, and personal empowerment.

4.5.1 Overall Effectiveness Level

Table 4.15: Distribution of Respondents by Effectiveness Level of SAG Services

Effectiveness Level	Frequency	Percent	Valid Percent	Cumulative %
Low (Score: 14–21.5)	11	18.3%	18.3%	18.3%
Moderate (Score: 21.6–43.2)	49	81.7%	81.7%	100.0%
High (Score: 43.3–70)	0	0.0%	0.0%	—
Total	60	100.0%	100.0%	

Note: Composite effectiveness score range 14–70. Low=14–21.5; Moderate=21.6–43.2; High=43.3–70. Mean score=25.80, SD=5.88. N=60.

Table 4.15 reveals that 81.7% of respondents (n=49) reported moderate effectiveness of the Anganwadi SAG services, while 18.3% (n=11) reported low effectiveness. Notably, no respondent scored in the high effectiveness band. The mean effectiveness score of 25.80 (SD=5.88) is in the lower segment of the moderate range (21.6–43.2), indicating that while a majority acknowledge some degree of benefit from scheme participation, the overall perceived effectiveness remains far below its potential. This finding raises important questions about the consistency and quality of service delivery in the study area.

4.5.2 Item-wise Mean Scores on the Effectiveness Scale (D1–D14)

Table 4.16: Item-wise Mean Scores on the Effectiveness of SAG Services (D1–D14)

Item	Statement	Mean	SD	Response Trend
D1	Regularly attend activities conducted at AWC	1.40	0.79	Strongly Disagree
D3	Participate in health and nutrition education sessions	1.32	0.50	Strongly Disagree

D4	Received Iron and Folic Acid (IFA) tablets	1.43	0.65	Strongly Disagree
D5	Eating habits improved after joining the scheme	1.50	0.60	Strongly Disagree
D6	Gained knowledge about balanced diet and nutrition	1.57	0.67	Strongly Disagree
D7	Feel healthier compared to before participating	1.58	0.56	Strongly Disagree
D8	Seek medical help more confidently after sessions	1.75	0.68	Disagree
D9	Understanding of personal hygiene has improved	2.38	0.88	Disagree–Neutral
D10	More aware of menstrual hygiene management	2.23	0.74	Disagree
D11	Can identify common health problems	2.07	0.73	Disagree
D12	Confidence level improved after scheme activities	2.35	0.80	Disagree
D13	Feel more comfortable expressing opinions	1.50	0.54	Strongly Disagree
D14	Learned decision-making skills through the programme	1.85	0.82	Disagree
	Overall Effectiveness Score (D1–D14)	25.80	5.88	Moderate

Note: Items rated on a 5-point scale (1=Strongly Disagree to 5=Strongly Agree).

Cronbach's Alpha for D-scale = 0.778 (acceptable). N=60.

Table 4.16 presents the item-wise mean scores for the Effectiveness scale. The data reveal a consistent pattern: the majority of effectiveness indicators returned low mean scores, with most respondents disagreeing or strongly disagreeing with positive statements about scheme impact.

The highest mean was recorded for D2 — "Regularly receive supplementary nutrition from the Anganwadi centre" (M=2.87, SD=1.19), indicating that while nutrition receipt was the most acknowledged benefit, even this remained below a neutral endorsement. D9 — "Understanding of personal hygiene has improved" (M=2.38, SD=0.88) and D12 — "Confidence level improved" (M=2.35, SD=0.80) were the next highest, suggesting marginal perceived benefits in hygiene knowledge and personal confidence.

Critically, D1 — "Regularly attend activities at AWC" (M=1.40, SD=0.79), D3 — "Participate in health and nutrition education sessions" (M=1.32, SD=0.50), D4 — "Received IFA tablets" (M=1.43, SD=0.65), and D5 — "Eating habits improved" (M=1.50, SD=0.60) all returned means close to 1 (Strongly Disagree), indicating that basic scheme components including centre attendance, education sessions, iron tablet provision, and dietary improvement were not being experienced by the majority of respondents. These are core SAG services, and their near-total non-utilisation represents a critical implementation failure.

4.6 Nutritional and Health Outcomes

This section further addresses Objective 2 by examining self-reported nutritional and health outcomes through five items (C1–C5) covering weight improvement, illness frequency, meal regularity, dietary quality, and haemoglobin status.

Table 4.17: Item-wise Mean Scores on Nutritional and Health Outcomes (C1–C5)

Item	Statement	Mean	SD	Response Trend
C1	Body weight improved in the past one year	1.42	0.53	Strongly Disagree

C2	Fall sick less frequently than before	1.58	0.62	Strongly Disagree
C3	Consume meals more regularly now	2.55	1.05	Neutral
C4	Include iron-rich foods in diet	1.47	0.57	Strongly Disagree
C5	Noticed improvement in haemoglobin level (if tested)	1.35	0.52	Strongly Disagree
	Overall Nutritional Outcomes Score	8.37	2.28	Low

Note: Items rated on a 5-point scale (1=Strongly Disagree to 5=Strongly Agree).

Cronbach's Alpha for C-scale = 0.684 (marginal/acceptable). N=60.

Table 4.17 reveals that perceived nutritional and health outcomes of SAG scheme participation were uniformly low. The highest mean was recorded for C3 — "Consume meals more regularly now" (M=2.55, SD=1.05), indicating some improvement in meal regularity among a portion of respondents, though this remained below the neutral point. All remaining items recorded means below 2.00, indicating strong disagreement with positive nutritional outcomes: C1 — body weight improvement (M=1.42, SD=0.53), C2 — reduced illness frequency (M=1.58, SD=0.62), C4 — inclusion of iron-rich foods (M=1.47, SD=0.57), and C5 — haemoglobin improvement (M=1.35, SD=0.52). The near-universal low response on haemoglobin improvement (C5, M=1.35) is particularly concerning given that anaemia prevention is a central objective of the SAG scheme. The overall nutritional outcomes mean score of 8.37 (SD=2.28) on

a possible range of 5–25 reflects that tangible nutritional benefits from the scheme had not been experienced by the majority of respondents at the time of the study.

4.7 Utilisation Pattern of SAG Food Kits and Core Services

This section addresses Objective 4: To examine the utilisation pattern of SAG food kits and core services among adolescent girls. Service utilisation was examined through Items D1–D4, which assessed participation in AWC activities, receipt of supplementary nutrition, participation in educational sessions, and receipt of IFA tablets.

Table 4.18: Utilisation Pattern of SAG Core Services and Food Kits (D1–D4)

Item	Statement	Str. Disagree	Disagree	Neutral	Agree/SA
D1	Regularly attend AWC activities	75.0%	13.3%	8.3%	3.3%
D2	Regularly receive supplementary nutrition	23.3%	6.7%	30.0%	40.0%
D3	Participate in health/nutrition education	70.0%	28.3%	1.7%	0.0%
D4	Received IFA (Iron & Folic Acid) tablets	63.3%	31.7%	3.3%	1.7%

Note: Responses are on a 5-point scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree). "Str. Disagree" = Strongly Disagree; "Agree/SA" = Agree and Strongly Agree combined. N=60.

Table 4.18 presents the utilisation pattern of SAG core services. The data reveal critically low levels of service uptake. For D1 (regular attendance at AWC activities), 88.3% of respondents strongly disagreed and 13.3% disagreed, indicating that 88.3% of adolescent girls were not regularly attending any activities at the Anganwadi centre. D3 (participation in health and nutrition education sessions) showed the most alarming pattern: 98.3% of respondents reported non-participation (70.0% strongly disagreed, 28.3% disagreed). Similarly, D4 (receipt of IFA tablets) showed that 95.0% of respondents had not received Iron and Folic Acid tablets through the scheme, which is

particularly significant given that IFA supplementation is one of the cornerstone interventions under the SAG to address adolescent anaemia.

The one partial exception was D2 (regular receipt of supplementary nutrition): 40.0% agreed they received it regularly, while 30.0% were neutral and 30.0% disagreed. This suggests that supplementary nutrition distribution, while inconsistent, had a somewhat broader reach than other scheme services. Overall, the utilisation data confirm that the SAG scheme in the study area suffers from critically low service delivery and beneficiary engagement, with core components of the scheme — education sessions, IFA supplementation, and regular attendance — failing to reach the intended beneficiaries.

4.8 Challenges and Barriers in Accessing SAG Services

This section addresses Objective 3: To identify barriers and challenges faced by adolescent girls in accessing and consuming SAG services. Challenges were assessed across 19 items (E1–E19) covering five domains: access and logistics, information and communication, service quality and regularity, social and familial factors, and institutional responsiveness.

Table 4.19: Item-wise Mean Scores on Challenges and Barriers Scale (E1–E19), Ranked by Mean

Ran k	Item Cod e	Challenge Statement	Mean	SD	Intensity
1	E5	Not clearly informed about benefits available under the scheme	4.72	0.64	High
2	E18	Not satisfied with the taste/quality of	4.70	0.50	High

		supplementary nutrition			
3	E8	Quality of services provided is not satisfactory	4.58	0.67	High
4	E10	Life skill and awareness sessions are insufficient	4.50	0.95	High
5	E14	Lack of follow-up from Anganwadi workers	4.47	0.60	High
6	E4	Lack of proper information prevents full utilization of services	4.33	0.80	High
7	E6	Communication regarding activities is not provided on time	4.27	0.78	High
8	E9	Health check-ups are conducted irregularly	4.02	0.60	High

9	E19	Miss services due to school timing conflicts	3.75	0.73	High
10	E3	Irregular functioning of Anganwadi Centre affects participation	3.65	0.78	High
11	E15	Grievances and complaints are not addressed properly	3.35	0.73	Moderate
12	E7	Supplementary nutrition is not provided regularly	3.23	0.81	Moderate
13	E2	Timing of services is inconvenient	3.12	0.67	Moderate
14	E17	Anganwadi Centre lacks adequate space or privacy	3.10	0.77	Moderate
15	E13	Gender norms restrict access to services	2.75	0.65	Low–Moderate
16	E12	Social stigma prevents discussion of	2.65	0.73	Low–Moderate

		adolescent health			
17	E11	Family restrictions limit participation in activities	2.32	1.03	Low
18	E16	Feel shy or uncomfortable visiting the Anganwadi Centre	2.25	0.84	Low
19	E1	Distance of the Anganwadi Centre makes attendance difficult	1.55	0.75	Low

Note: Items rated on a 5-point scale (1=Strongly Disagree to 5=Strongly Agree).

Higher mean indicates a more widely experienced challenge. Highlighted rows (Ranks 1–5) indicate the most severe barriers. Cronbach's Alpha = 0.813 (good). N=60.

Table 4.19 presents the 19 challenge items ranked by their mean scores. The data reveal a clear hierarchy of barriers, with systemic information and quality deficits dominating at the top of the ranking.

The most severely experienced challenge was E5 — "Not clearly informed about benefits available under the scheme" (M=4.72, SD=0.64), indicating near-universal agreement that beneficiaries were not adequately informed about what the SAG scheme offered them. This finding directly corroborates the low awareness levels documented in Section 4.4. The second-ranked challenge was E18 — "Not satisfied with taste/quality of supplementary nutrition" (M=4.70, SD=0.50), reflecting strong and consistent dissatisfaction with the quality of nutrition provided — a barrier that may directly

discourage food kit acceptance and utilisation. The third barrier, E8 — "Quality of services not satisfactory" (M=4.58, SD=0.67), extends this concern to the overall service quality at Anganwadi centres.

E10 — "Life skill and awareness sessions are insufficient" (M=4.50, SD=0.95) was ranked fourth, confirming that the life skills and empowerment component of the SAG, which is a distinctive and important feature of the scheme, was perceived as grossly inadequate by respondents. The fifth-ranked barrier, E14 — "Lack of follow-up from Anganwadi workers" (M=4.47, SD=0.60), highlights a critical gap in community outreach and worker accountability, as regular follow-up by Anganwadi workers is essential for maintaining adolescent beneficiary engagement.

Items ranked 6–10 (E4, E6, E9, E19, E3) returned means between 3.65 and 4.33, indicating that poor communication, irregular health check-ups, school timing conflicts, and irregular AWC functioning were also widely experienced as significant challenges. Importantly, structural barriers such as distance (E1, M=1.55), shyness (E16, M=2.25), and family restrictions (E11, M=2.32) were ranked at the lower end, suggesting that logistical and physical access was not the primary barrier in this coastal community. The barriers were predominantly informational, systemic, and quality-related — meaning they can be addressed through targeted administrative and programmatic interventions rather than infrastructure development.

4.9 Association between Socio-Demographic Variables and Awareness Level

Chi-square tests of independence were employed to examine the relationship between sociodemographic variables and composite awareness level. Variables that were constants across the entire sample (Education status: all school-going; Place of Residence: all Coastal; Menarche Status: all attained) were excluded from analysis as chi-square statistics could not be computed.

Table 4.20: Association between Socio-Demographic Variables and Awareness Level

Variable	χ^2 Value	df	p-value	Significance	Key Finding

Age	2.615	2	.270	Not significant	—
Religion	3.897	1	.048	Significant	Christians showed higher awareness (73.6%) vs Hindus (28.6%)
Caste	0.158	1	.691	Not significant	—
Monthly Household Income	1.112	2	.574	Not significant	—
Registration Status	17.279	2	.000	Highly Significant	Registered girls: 82.2% moderate; Non-registered: 33.3%
					moderate

Type of Family	0.000	1	1.000	Not significant	—
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Note: $p < .05$; $p < .01$; $p < .001$. Significance threshold: $p < .05$. Several cells had expected count less than 5; results for small-n categories (e.g., caste) should be interpreted with caution.

Table 4.20 summarises the chi-square test results for the association between sociodemographic variables and awareness level.

Registration Status and Awareness: The strongest and most significant association was found between registration status at the Anganwadi centre and awareness level ($\chi^2 = 17.279$, $df = 2$, $p < .001$). Among registered respondents, 82.2% were classified as having moderate awareness, compared to only 33.3% among non-registered respondents. This finding is expected and theoretically coherent — girls who are registered and attend the centre are more likely to be exposed to scheme information through direct contact with Anganwadi workers, thereby developing greater awareness. This finding underscores the critical role of registration as the gateway to scheme knowledge and participation.

Religion and Awareness: A statistically significant association was also found between religion and awareness level ($\chi^2 = 3.897$, $df = 1$, $p = .048$). Among Hindu respondents ($n=7$), only 28.6% were classified as having moderate awareness, compared to 73.6% among Christian respondents ($n=53$). While this association is statistically significant, the result must be interpreted with considerable caution given the highly unequal group sizes and the small number of Hindu respondents ($n=7$) resulting in expected cell counts below the recommended minimum of 5. The finding may reflect community-specific mobilisation patterns or varying levels of engagement with Anganwadi services across religious communities in the study area.

Age, Caste, Income, and Family Variables: No statistically significant associations were found between awareness level and age ($p=.270$), caste ($p=.691$), monthly household income ($p=.574$), or type of family ($p=1.000$). The absence of a significant age effect is particularly noteworthy, suggesting that awareness of the SAG scheme does not increase naturally with age within the adolescent band, pointing to the absence of progressive information exposure over time.

4.10 Association between Socio-Demographic Variables and Effectiveness Level

Chi-square tests and Spearman's rank correlation were used to examine the associations between socio-demographic variables and effectiveness level. Constant variables were again excluded from analysis.

Table 4.21: Chi-Square and Correlation Results: Socio-Demographic Variables and Effectiveness Level

Variable	χ^2	df	p-value	Spearman ρ	ρ pvalue	Key Finding
Age	14.283	2	.001	.364	.004	Older girls show significantly higher effectiveness
Religion	0.000	1	1.000	-.047	.724	Not significant
Caste	0.000	1	1.000	-.008	.954	Not significant
Monthly Household Income	7.415	2	.025	-.177	.176	Lower income = higher effectiveness (borderline)
Registration Status	24.972	2	.000	.582	.000	Registered girls: 87.8% moderate; Non-registered: 33.3% moderate
Type of Family	0.000	1	1.000	.086	.514	Not significant

Note: $p < .05$; $p < .001$. Spearman ρ computed between ordinal demographic category codes and effectiveness score. Significant results are highlighted. Several cells had expected count less than 5.

Table 4.21 presents the chi-square and Spearman correlation results for effectiveness level. Registration Status and Effectiveness: The strongest association was between registration status and effectiveness level ($\chi^2 = 24.972$, $df = 2$, $p < .001$; Spearman $\rho = .582$, $p < .001$). Among registered girls, 87.8% reported moderate effectiveness, compared to only 33.3% among non-registered girls and 66.7% among those who did not know their registration status. The Spearman correlation of .582 indicates a moderate-to-strong positive relationship, confirming that registered girls consistently perceived greater scheme effectiveness. This finding reinforces the centrality of registration as a predictor of both awareness and effectiveness outcomes.

Age and Effectiveness: A statistically significant association was observed between age and effectiveness level ($\chi^2 = 14.283$, $df = 2$, $p = .001$; Spearman $\rho = .364$, $p = .004$). All five respondents in the 10–12 years age group (100%) were classified as having low effectiveness. In contrast, 84.4% of the 13–15 age group and 91.3% of the 16–18 age group reported moderate effectiveness. The positive Spearman correlation of .364 confirms that perceived effectiveness increases with age — potentially reflecting longer duration of scheme exposure, greater ability to recognise health benefits, or more consistent attendance among older adolescents.

Monthly Household Income and Effectiveness: A statistically significant association was found between income and effectiveness level ($\chi^2 = 7.415$, $df = 2$, $p = .025$). Among respondents in the ₹10,001–20,000 income bracket, 89.1% reported moderate effectiveness, compared to 58.3% in the ₹20,001–30,000 bracket. This inverse relationship suggests that lower-income families may be more engaged with and dependent on SAG services, thereby experiencing greater perceived benefit. However, given the small cell sizes ($n=2$ in the below-₹10,000 category), this result should be interpreted with caution.

Religion, Caste, and Family Variables: No significant associations were found between effectiveness level and religion ($p=1.000$), caste ($p=1.000$), or type of family ($p=1.000$). The absence of a religious effect on effectiveness — in contrast to the significant effect on awareness — suggests that once girls participate in the scheme regardless of religion, their perceived effectiveness is similar.

4.11 Correlation Analysis: Awareness, Effectiveness, and Nutritional Outcomes

Pearson's correlation coefficient was computed to examine the relationships between composite awareness scores, effectiveness scores, and nutritional outcome scores. This analysis addresses the theoretically important question of whether greater awareness of the SAG scheme is associated with higher perceived effectiveness and better nutritional outcomes.

Table 4.22: Pearson's Correlation Matrix: Awareness, Effectiveness, and Nutritional Outcomes Scores

Variable Pair	Pearson r	p-value	Strength	Significance
Awareness Score × Effectiveness Score	0.417	0.001	Moderate positive	Significant
Awareness Score × Nutritional Outcomes Score	0.185	0.158	Weak positive	Not Significant
Effectiveness Score × Nutritional Outcomes Score	0.663	0.000	Strong positive	Significant

Note: $p < .001$. Correlation coefficients based on composite scale scores. $N=60$.

Table 4.22 presents the Pearson correlation results. A moderate and statistically significant positive correlation was found between awareness score and effectiveness score ($r = .417$, $p = .001$), indicating that adolescent girls with higher awareness of the SAG scheme tended to report greater perceived effectiveness of its services. This relationship suggests that informational outreach — which increases awareness — may be an important pathway to improving perceived scheme effectiveness.

The correlation between awareness score and nutritional outcomes score was weak and nonsignificant ($r = .185$, $p = .158$), indicating that awareness alone does not directly translate into measurable nutritional improvement. This finding is important: it implies that knowledge of the scheme is necessary but not sufficient to produce nutritional

outcomes; actual service utilisation and food kit consumption are likely the mediating factors.

The most striking finding was the strong positive correlation between effectiveness score and nutritional outcomes score ($r = .663$, $p < .001$). This indicates that adolescent girls who perceived greater effectiveness of the SAG services — including service attendance, IFA receipt, dietary education, and personal empowerment — also reported significantly better nutritional and health outcomes. The strength of this correlation ($r = .663$) is notable and suggests that actual scheme engagement is a powerful predictor of nutritional benefit. This finding has direct policy implications: improving the quality and consistency of service delivery (which drives effectiveness) is likely to produce tangible improvements in adolescent girls' health and nutritional status.

4.12 Conclusion

The following table consolidates data analysis and interpretations of the study in relation to each research objective.

Table 4.14: Summary of Data Analysis

No.	Objective	Summary Finding
1	Awareness of SAG Scheme	63.3% of respondents were not at all aware of Anganwadi SAG services (B1 global item). On the composite scale, 68.3% scored moderate awareness and 31.7% low awareness; no respondent achieved high awareness. Mean awareness score was 18.28 (SD=3.70). Knowledge was highest for free-of-cost services (B9, M=3.60) and lowest for SAG-specific awareness (B2, M=1.05). Religion ($p=.048$) and registration status ($p<.001$) were significantly associated with awareness level.

2	Effectiveness of SAG Services	81.7% showed moderate effectiveness; 18.3% low; none showed high effectiveness. Mean effectiveness score was 25.80 (SD=5.88). Supplementary nutrition receipt (D2, M=2.87) and hygiene awareness (D9, M=2.38) showed the highest means. Attendance at
		AWC (D1, M=1.40) and health education participation (D3, M=1.32) were lowest. Age ($p=.001$), income ($p=.025$), and registration status ($p<.001$) were significantly associated with effectiveness.
3	Barriers and Challenges	The top 5 challenges were: (1) not clearly informed about benefits (E5, M=4.72), (2) dissatisfaction with nutrition quality (E18, M=4.70), (3) unsatisfactory service quality (E8, M=4.58), (4) insufficient life skill sessions (E10, M=4.50), and (5) lack of followup from AWC workers (E14, M=4.47). Systemic and informational barriers dominated, while structural barriers (distance, stigma, family restrictions) were comparatively less severe.
4	Utilisation of SAG Food Kits	Service utilisation was critically low. 88.3% did not regularly attend AWC activities (D1). 98.3% did not participate in health education sessions (D3). 95.0% had not received IFA tablets (D4). Supplementary nutrition receipt was relatively higher with 40.0% agreeing they received it regularly (D2). These findings indicate a significant disconnect between scheme provisions and actual beneficiary uptake.
5	Suggestions for Improvement	Based on the findings: strengthen outreach and IEC campaigns; ensure universal registration; regularise health check-ups and life skills sessions; improve nutrition quality and follow-up mechanisms; and address school timing conflicts to increase adolescent girls' participation in SAG activities.

Source: Primary data. N=60 adolescent girls, coastal area of Kollam/Thiruvananthapuram district, Kerala.

To summarise the key findings of this chapter: awareness of the SAG scheme among adolescent girls in the study area was critically low, with no respondent achieving high awareness. Effectiveness of the scheme was perceived as moderate by a majority, but concentrated at the lower end of the moderate range. Service utilisation — including attendance at AWC, IFA tablet receipt, and participation in educational sessions — was negligibly low. The dominant barriers were informational and quality-related, primarily the lack of clear communication about scheme benefits and dissatisfaction with nutrition quality and service delivery. Registration status was the single strongest predictor of both awareness and effectiveness outcomes. A significant positive correlation between effectiveness and nutritional outcomes ($r=.663$) suggests that strengthening actual service delivery would yield direct health benefits for beneficiaries. These findings collectively point to the need for urgent programmatic intervention to improve outreach, registration, service quality, and beneficiary engagement under the SAG scheme in the study area.

CHAPTER 5

FINDINGS, SUGGESTIONS& CONCLUSION

CHAPTER 5: FINDINGS, SUGGESTIONS& CONCLUSION

5.1 Introduction

The present study was conducted to assess the awareness and effectiveness of the Scheme for Adolescent Girls (SAG) among adolescent girls in the coastal areas of Kollam district. The discussion is organized according to the specific objectives of the study. The findings are discussed in relation to previous empirical studies and the theoretical framework adopted for the study. The discussion focuses on awareness regarding the scheme, effectiveness of the services, nutritional and health outcomes, utilization of services, barriers affecting participation, and the relationships among key study variables.

5.2 Discussion Related to Awareness of the Scheme for Adolescent Girls

The study revealed that awareness regarding the Scheme for Adolescent Girls was generally low to moderate among adolescent girls. Although a majority of respondents were categorized under the moderate awareness level, none of the respondents demonstrated a high level of awareness. Awareness was largely limited to basic information regarding the availability of free services and supplementary nutrition, while knowledge regarding programme objectives, registration procedures, life-skill education, health services, and other components of the scheme remained inadequate. These findings are consistent with the findings of Jose and Antony (2020), who reported poor awareness regarding adolescent health programmes among tribal adolescent girls in Kerala. Similar observations were made by Meshram et al. (2019), who found that awareness regarding adolescent nutrition and health interventions was low among adolescent girls in Maharashtra. Kumar et al. (2012) also reported inadequate awareness regarding adolescent welfare programmes and highlighted the need for stronger awareness generation strategies.

The similarity between these studies and the present findings suggests that inadequate dissemination of programme-related information continues to be a major challenge in adolescent welfare programmes. Although various services are available through Anganwadi centres, many adolescent girls remain unaware of the full range of benefits available to them. The findings indicate that information dissemination mechanisms may not be sufficiently reaching adolescent beneficiaries.

The study further found a significant association between registration status and awareness level. Registered beneficiaries reported higher awareness compared to non-registered beneficiaries. This finding indicates that programme contact and continued engagement with Anganwadi services contribute to better understanding of the scheme and its benefits.

From the perspective of the Health Belief Model, awareness serves as an important prerequisite for participation in health-related programmes. When adolescent girls possess adequate information regarding available services and benefits, they are more likely to recognize the importance of participation and utilize programme services.

5.3 Discussion Related to the Effectiveness of the Scheme for Adolescent Girls

The findings revealed that the effectiveness of the Scheme for Adolescent Girls was predominantly moderate. Most respondents perceived the scheme to be moderately effective, while a smaller proportion reported low effectiveness. No respondent perceived the scheme to be highly effective.

The findings suggest that the scheme has achieved partial success in addressing the nutritional and health needs of adolescent girls. However, the absence of a high effectiveness category indicates that the programme has not yet fully achieved its intended objectives among the study population.

Among the various programme components, supplementary nutrition emerged as the most effectively delivered service. Respondents reported relatively better access to nutritional support compared to other programme services. However, participation in health education sessions, life-skill education programmes, and Anganwadi activities was found to be considerably low.

These findings correspond with those of Ramya (2012), who reported improvements in nutritional indicators among adolescent girls receiving nutritional supplementation. Bhaskaram et al. (2003) similarly observed positive outcomes associated with micronutrient supplementation among adolescent girls. However, Singh et al. (2007) noted that supplementary nutrition programmes often failed to adequately meet the nutritional requirements of beneficiaries because of concerns related to quality, quantity, and programme implementation.

The moderate effectiveness observed in the present study may therefore reflect the fact that nutritional support is being provided, but complementary services such as health education, life-skill development, counselling, and regular follow-up are not being implemented effectively.

The study also identified significant associations between effectiveness and age, monthly household income, and registration status. Registered beneficiaries reported higher effectiveness levels compared to non-registered respondents. This finding suggests that active participation and regular contact with Anganwadi services contribute positively to the effectiveness of the scheme.

5.4 Discussion Related to Nutritional and Health Outcomes

The findings indicated that nutritional and health outcomes among respondents remained relatively low. Improvements in body weight, haemoglobin status, dietary diversity, consumption of iron-rich foods, and reduction in illness frequency were reported at low levels. Although supplementary nutrition was available, substantial improvements in nutritional outcomes were not widely reported by respondents.

These findings differ somewhat from those reported by Ramya (2012), who documented significant improvements in haemoglobin levels among adolescent girls receiving fortified nutritional supplements. Similarly, Bhaskaram et al. (2003) observed positive changes in nutritional status following micronutrient interventions.

The differences between these findings may be explained by variations in programme implementation, beneficiary compliance, duration of intervention, and contextual factors. While controlled nutritional interventions often demonstrate measurable outcomes, programme-based service delivery may face challenges related to irregular participation, inconsistent utilization, and operational constraints.

The study revealed a strong positive relationship between effectiveness and nutritional outcomes. Respondents who perceived the programme as more effective also reported better nutritional and health outcomes. This finding highlights the importance of programme quality and service delivery in achieving the intended nutritional benefits of the scheme.

Interestingly, awareness alone was not significantly associated with nutritional outcomes. This suggests that knowledge regarding the programme is not sufficient by

itself to improve health status. Rather, actual participation in programme activities and effective utilization of available services appear to be more important determinants of nutritional improvement.

5.5 Discussion Related to Utilization of SAG Services

The findings revealed low levels of utilization of several key services provided under the Scheme for Adolescent Girls. Participation in health education sessions, attendance at Anganwadi activities, and receipt of Iron and Folic Acid tablets were reported at relatively low levels. Although supplementary nutrition was utilized to a greater extent, overall utilization of programme services remained inadequate.

These findings are consistent with those reported by Negi et al. (2019), who found that only a limited proportion of adolescent girls regularly utilized services available through Anganwadi centres. Nair et al. (2017) similarly observed low utilization of supplementary nutrition and adolescent health services despite awareness of programme availability. Kumar et al. (2012) also reported low utilization rates among beneficiaries of adolescent-focused welfare programmes.

The findings indicate that availability of services alone does not guarantee utilization. Various operational, informational, and behavioural factors may influence whether adolescent girls actively participate in programme activities.

Low utilization of educational and developmental components of the scheme is particularly concerning because these services are intended to improve health knowledge, life skills, confidence, and decision-making abilities among adolescent girls. The findings suggest the need for strengthening beneficiary engagement and improving accessibility of programme activities.

5.6 Discussion Related to Barriers and Challenges

The study identified several barriers that affected access to and utilization of SAG services. The most prominent barriers included inadequate information regarding programme benefits, dissatisfaction with the quality and taste of supplementary nutrition, poor service quality, insufficient awareness programmes, and lack of regular follow-up by Anganwadi workers.

These findings are similar to those reported by Negi et al. (2019), who identified inadequate awareness and irregular service delivery as major barriers affecting programme utilization. Kumar et al. (2012) also highlighted shortcomings in programme outreach and information dissemination. Nair et al. (2017) observed that despite the existence of services, operational and communication barriers limited beneficiary participation.

The findings suggest that informational barriers remain one of the most significant obstacles to effective programme implementation. When adolescent girls are not adequately informed about available services and benefits, they are less likely to participate actively in programme activities.

Dissatisfaction with supplementary nutrition also emerged as a major concern. This finding suggests that beneficiary perceptions regarding quality and acceptability of food supplements may influence programme utilization. Improving the quality and acceptability of nutritional supplements may therefore contribute to increased participation.

From the perspective of the Social Ecological Model, these barriers operate at multiple levels. Individual-level barriers include inadequate awareness and motivation, while institutional barriers include poor service quality, irregular programme implementation, and insufficient follow-up mechanisms. Addressing these barriers requires interventions at multiple levels of the social environment.

5.7 Discussion of Relationships Among Awareness, Effectiveness, and Nutritional Outcomes

The study identified a positive and statistically significant relationship between awareness and effectiveness. Respondents with greater awareness regarding the scheme tended to perceive the programme as more effective.

This finding supports the observations of previous studies that emphasized the importance of awareness in promoting participation and programme engagement. Greater awareness may enhance understanding of programme benefits and encourage beneficiaries to access available services.

The strongest relationship observed in the study was between effectiveness and nutritional outcomes. The positive correlation indicates that respondents who

experienced higher levels of programme effectiveness also reported better nutritional and health outcomes.

This finding demonstrates that programme effectiveness plays a crucial role in determining the extent to which nutritional benefits are realized among beneficiaries. Improvements in service quality, programme accessibility, beneficiary participation, and follow-up mechanisms may therefore contribute directly to improved health outcome. The absence of a significant relationship between awareness and nutritional outcomes further suggests that awareness alone is insufficient to produce measurable improvements in health status. Actual utilization of services and effective programme implementation appear to be the critical pathways through which positive nutritional outcomes are achieved.

The discussion revealed that awareness regarding the Scheme for Adolescent Girls among adolescent girls in the coastal areas of Kollam district remained low to moderate. Although the programme was perceived as moderately effective, important service components such as health education, life-skill development, and Iron and Folic Acid supplementation were underutilized. Nutritional and health outcomes remained limited despite the availability of supplementary nutrition. Significant relationships were observed between awareness and effectiveness, and between effectiveness and nutritional outcomes. Major barriers included inadequate information dissemination, poor service quality, dissatisfaction with supplementary nutrition, insufficient awareness programmes, and lack of regular follow-up. The findings indicate that strengthening programme outreach, improving service delivery increasing beneficiary participation, and addressing implementation challenges are essential for enhancing the effectiveness of the Scheme for Adolescent Girls.

5.8 Suggestions and Recommendations

A. Programme-Level Recommendations (For ICDS, Anganwadi Centres, and the Women and Child Development Department)

- Comprehensive awareness campaigns should be conducted regularly through Anganwadi Centres to ensure that adolescent girls clearly understand the

objectives, benefits, eligibility criteria, and services available under the Scheme for Adolescent Girls.

- Structured adolescent-focused sessions on nutrition, reproductive health, menstrual hygiene, mental health, and life-skill development should be organized at regular intervals as part of routine Anganwadi activities.
- The quality, acceptability, taste, and variety of supplementary nutrition should be improved to increase beneficiary satisfaction and encourage regular utilization.
- A systematic follow-up mechanism should be established whereby Anganwadi workers maintain periodic contact with registered beneficiaries and monitor service utilization.
- Registration drives should be conducted annually to ensure that all eligible adolescent girls are enrolled under the scheme and receive programme benefits.
- The supply and distribution of Iron and Folic Acid tablets, health supplements, and educational materials should be monitored to prevent interruptions in service delivery.
- Periodic health check-ups, nutritional assessments, and counselling sessions should be conducted to identify high-risk adolescents and provide appropriate interventions.
- Capacity-building programmes should be organized for Anganwadi workers to strengthen their communication skills, counselling abilities, adolescent engagement strategies, and programme management competencies.
- Monitoring and evaluation systems should be strengthened through regular inspections, performance reviews, and beneficiary feedback mechanisms.
- Digital record-keeping systems may be introduced to facilitate beneficiary tracking, service monitoring, and programme evaluation.

B. Community-Level Recommendations

- Community awareness programmes should be organized with the participation of parents, local self-government institutions, community leaders, youth clubs, and women's groups to increase awareness regarding adolescent health and nutrition.

- Parents should be actively involved in programme activities to enhance family support for adolescent girls' participation in SAG services.
- Community-based adolescent support groups may be established to promote peer learning, mutual support, and greater engagement in health-promoting activities.
- Local self-government institutions should collaborate with Anganwadi Centres to mobilize community participation and strengthen programme outreach.
- Community volunteers may be trained to assist in awareness generation, beneficiary identification, and dissemination of information regarding available services.
- Regular health camps and nutrition awareness programmes should be conducted at the community level to improve knowledge regarding adolescent health issues.
- Community-level monitoring committees may be formed to support transparency, accountability, and effective implementation of SAG services.
- Special outreach initiatives should be undertaken to reach vulnerable and marginalized adolescent girls who may not regularly access Anganwadi services.

C. School-Level Recommendations

- Schools should establish closer coordination with Anganwadi Centres to facilitate information sharing and improve awareness regarding SAG services among students.
- Nutrition education, menstrual hygiene management, reproductive health awareness, and life-skill education should be integrated into school health programmes.
- Teachers should be sensitized regarding the objectives of the scheme so that they can motivate eligible students to register and participate in programme activities.
- School health clubs should be strengthened as platforms for promoting awareness regarding adolescent health and nutrition.
- Joint programmes involving schools and Anganwadi Centres should be conducted periodically to improve service utilization and beneficiary engagement.

- School schedules and programme timings should be coordinated to minimize conflicts that may prevent adolescent girls from participating in Anganwadi activities.
- Career guidance, leadership development, and psychosocial support programmes should be integrated with SAG activities to promote holistic adolescent development.
- Peer educators may be trained within schools to support awareness generation and encourage participation among fellow students.

D. Policy-Level Recommendations

- Greater budgetary allocation should be provided for adolescent-focused interventions under ICDS and related schemes to improve the quality and coverage of services.
- Policy frameworks should emphasize a holistic approach to adolescent development that integrates nutrition, health, education, psychosocial well-being, and life-skill development.
- Convergence among the Departments of Women and Child Development, Health, Education, and Local Self-Government should be strengthened to ensure coordinated service delivery.
- State-level monitoring and evaluation systems should be enhanced to ensure accountability, quality assurance, and evidence-based decision-making.
- Digital platforms and mobile-based communication systems should be utilized for beneficiary registration, awareness dissemination, and service monitoring.
- Policies should support regular programme evaluations and independent assessments to identify implementation gaps and improve programme effectiveness.
- Special policy attention should be directed toward underserved populations, including coastal communities, tribal populations, and economically disadvantaged groups.
- Incentive-based strategies may be considered to encourage regular participation in health education sessions, nutritional counselling programmes, and life-skill activities.

- Statewide awareness campaigns using mass media, social media, and community communication platforms should be implemented to improve public understanding of adolescent welfare programme
- Future policy initiatives should focus on outcome-based monitoring rather than merely measuring service delivery, ensuring that improvements in nutritional status, awareness, and adolescent well-being become key indicators of programme success.

5.10 Conclusion

The present study was undertaken to assess the awareness and effectiveness of the Scheme for Adolescent Girls (SAG) among adolescent girls in the coastal areas of Kollam district. The study was guided by the need to understand the extent to which the scheme has been successful in improving awareness, nutritional well-being, health outcomes, and utilization of services among adolescent girls. The findings indicate that while the scheme has established a foundation for addressing the nutritional and developmental needs of adolescent girls, its overall impact remains moderate due to gaps in awareness, utilization, and service delivery.

One of the major findings of the study was the low to moderate level of awareness regarding the Scheme for Adolescent Girls. Although most respondents fell within the moderate awareness category, a substantial proportion of adolescent girls reported limited knowledge regarding the objectives, benefits, registration procedures, and various services available under the scheme. Awareness was primarily restricted to the availability of supplementary nutrition, while important components such as health education, life-skill development, counselling services, and nutritional guidance were less understood. These findings are consistent with the observations of Jose and Antony (2020), Meshram et al. (2019), and Kumar et al. (2012), who reported inadequate awareness regarding adolescent health and nutrition programmes among beneficiaries. The findings suggest that information dissemination mechanisms have not been sufficiently effective in ensuring comprehensive understanding of the scheme among adolescent girls.

The effectiveness of the scheme was perceived as moderate by the majority of respondents. Supplementary nutrition emerged as the most visible and accessible component of the programme, indicating that nutritional support continues to be the

primary focus of implementation. However, the study revealed relatively low participation in health education sessions, life-skill programmes, and other developmental activities intended to promote holistic adolescent development. These findings suggest that although the nutritional component of SAG is functioning to some extent, the broader objectives of adolescent empowerment, health promotion, and capacity building are not being realized to their full potential. Similar concerns regarding gaps in programme implementation and service utilization have been highlighted in previous studies on adolescent welfare interventions.

The study further revealed that improvements in nutritional and health outcomes were limited. Respondents reported only modest improvements in dietary practices, consumption of iron-rich foods, haemoglobin status, body weight, and overall health. Nevertheless, a strong positive relationship was observed between programme effectiveness and nutritional outcomes, indicating that improved implementation and service utilization are likely to enhance health benefits among beneficiaries. These findings partially support earlier studies that documented positive effects of nutritional supplementation programmes while also highlighting the challenges of translating programme availability into measurable improvements in health outcomes.

The findings regarding utilization patterns demonstrated that the availability of services does not necessarily ensure their effective utilization. Participation in Anganwadi activities, health education sessions, and Iron and Folic Acid supplementation programmes was found to be relatively low. This observation supports earlier studies which reported that adolescent-focused services often experience low participation despite their availability. The findings indicate that programme success depends not only on service provision but also on the extent to which beneficiaries actively engage with the services offered.

An important contribution of the study was the identification of barriers and challenges affecting programme utilization. Lack of adequate information regarding programme benefits, dissatisfaction with the quality of supplementary nutrition, poor service quality, insufficient awareness sessions, and inadequate follow-up by service providers emerged as the most significant barriers. These findings indicate that operational and implementation-related issues continue to limit programme effectiveness. The challenges identified in the present study closely resemble those reported in earlier

research, suggesting that systemic barriers remain persistent across different geographical and social contexts.

The findings of the study can be interpreted through the Health Belief Model and the Social Ecological Model. The Health Belief Model emphasizes that awareness and perceived benefits influence participation in health programmes. The low awareness levels observed among respondents may therefore reduce motivation to access available services. Similarly, the Social Ecological Model highlights the influence of interpersonal, institutional, and community-level factors on health behaviour. The barriers identified in the present study, including inadequate communication, service quality issues, and limited institutional support, demonstrate the relevance of this framework in understanding programme utilization. The findings suggest that improvements are required not only at the individual level but also within the broader service delivery environment.

Overall, the study concludes that the Scheme for Adolescent Girls is achieving its objectives only to a moderate extent among adolescent girls in the coastal areas of Kollam district. While the scheme has succeeded in providing supplementary nutrition and establishing a support system for adolescent girls, significant improvements are required in awareness generation, service utilization, programme monitoring, and beneficiary engagement. The study underscores the need for a more comprehensive and integrated approach to adolescent development that combines nutrition, health education, life-skill development, community participation, and effective service delivery. Strengthening these components will be essential for ensuring that the Scheme for Adolescent Girls fully achieves its intended objectives and contributes meaningfully to the health and well-being of adolescent girls.

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ANNEXURE

SURVEY QUESTIONNAIRE

Title: Assessing Awareness and Effectiveness of Anganwadi Scheme for Adolescent Girls (SAG) among Adolescent Girls in coastal area of Thiruvananthapuram

SECTION A: SOCIO-DEMOGRAPHIC PROFILE

(For Adolescent Girls)

1. Age:

☐ 10–12 years

☐ 13–15 years

☐ 16–18 years

2. Education Status:

☐ School going

☐ Dropped out

☐ Never attended school

3. Class Studying (if applicable): _____

4. Religion:

☐ Hindu

☐ Muslim

☐ Christian

☐ Other

5. Caste:

☐ SC

☐ ST

☐ OBC

☐ General

6. Type of Family:

☐ Nuclear

☐ Joint

☐ Extended

7. Number of Family Members:

☐ 1–3

☐ 4–6

☐ Above 6

8. Monthly Household Income:

☐ Below ₹10,000

☐ ₹10,001–20,000

☐ ₹20,001–30,000

☐ Above ₹30,000

Name of House Member	Relationship	Gender	Age	Educational Qualification	Remarks (Any disabilities)

9. Are you currently registered at the Anganwadi centre?

- ☐ Yes
☐ No
☐ Don't know

10. Place of residence:

- ☐ Rural
☐ Urban
☐ Tribal

11. Have you attained menarche?

- ☐ Yes
☐ No
☐ Prefer not to say

SECTION B: AWARENESS

AWARENESS ABOUT ANGANWADI & SAG

Instruction: Tick the appropriate response.

- ☐ 1 – Not at all aware
☐ 2 – Slightly aware
☐ 3 – Moderately aware
☐ 4 – Very aware
☐ 5 – Extremely aware

Global Awareness

B1. Awareness of Anganwadi Services for Adolescent Girls
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B2. Awareness of the Scheme for Adolescent Girls (SAG)
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Specific Awareness Items

B3. I am aware that the primary objective of the scheme is to improve the nutritional and health status of adolescent girls.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B4. I am aware that the scheme aims to create awareness about health and hygiene among adolescent girls.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B5. I know that the scheme focuses on empowering adolescent girls through life skill education.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B6. I am aware that supplementary nutrition is provided under the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B7. I know that regular health check-ups are conducted for beneficiaries under the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B8. I am aware that nutrition and health education sessions are provided under the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B9. I know that the services under the scheme are provided free of cost.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B10. I am aware of the registration process at the Anganwadi Centre to receive benefits under the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

2: Nutritional & Health Outcomes

Instruction: Indicate your agreement.

C1. My body weight has improved in the past one year.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

C2. I fall sick less frequently than before.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

C3. I consume meals more regularly now.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

C4. I include iron-rich foods in my diet.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

C5. I have noticed improvement in my haemoglobin level (if tested).
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3: Effectiveness of Anganwadi Services

1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

D1. I regularly attend activities conducted at the Anganwadi centre.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D2. I regularly receive supplementary nutrition from the Anganwadi centre.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D3. I participate in health and nutrition education sessions conducted at the centre.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D4. I have received Iron and Folic Acid (IFA) tablets through the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D5. My eating habits have improved after joining the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D6. I have gained knowledge about balanced diet and nutrition.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D7. I feel healthier compared to before participating in the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D8. I seek medical help more confidently after attending awareness sessions.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D9. My understanding of personal hygiene has improved.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D10. I am more aware of menstrual hygiene management now.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D11. I can identify common health problems and know when to seek help.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D12. My confidence level has improved after participating in scheme activities.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D13. I feel more comfortable expressing my opinions.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D14. I have learned decision-making skills through the programme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D15. I feel more empowered to take care of my health and well-being.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Challenges in Accessing Services

1 – Strongly Disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly Agree

E1. Distance of the Anganwadi centre makes it difficult for me to attend regularly.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E2. The timing of services is inconvenient.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E3. Irregular functioning of the Anganwadi centre affects my participation.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E4. Lack of proper information about the scheme prevents full utilization.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E5. I am not clearly informed about the benefits available under the scheme.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E6. Communication regarding activities is not provided on time.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E7. Supplementary nutrition is not provided regularly.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E8. Quality of services provided is not satisfactory.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E9. Health check-ups are conducted irregularly.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E10. Life skill or awareness sessions are insufficient.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E11. Family restrictions limit my participation in activities.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E12. Social stigma prevents discussion of adolescent health issues.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E13. Gender norms restrict my access to services.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E14. Lack of follow-up from Anganwadi workers affects service utilization.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E15. Grievances or complaints are not addressed properly.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E16. I feel shy or uncomfortable visiting the Anganwadi centre.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E17. The Anganwadi centre lacks adequate space or privacy.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E18. I am not satisfied with the taste/quality of supplementary nutrition.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

E19. I miss services due to school timing conflicts.
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

D: Suggestions for Improving Anganwadi Services

1. What changes would help you attend the Anganwadi centre more regularly?
2. What improvements are needed in supplementary nutrition?
3. How can awareness about the Scheme for Adolescent Girls be improved in your area?
4. Any other suggestions to improve services for adolescent girls: