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"Prevalence and Sociodemographic correlates of Consanguineous Marriage in Rural population of Vijayapura District"

By

Dr. ARUN P SASI

Dissertation submitted to

B.L.D.E. DEEMED TO BE UNIVERSITY
VIJAYAPURA, KARNATAKA

In partial fulfilment of the requirements for the degree of

DOCTOR OF MEDICINE

In

COMMUNITY MEDICINE
Under the guidance of

Dr. REKHA UDGIRI M.D
Professor

Department of Community Medicine

B.L.D.(DU) SHRI B.M. PATIL MEDICAL COLLEGE
HOSPITAL AND RESEARCH CENTRE VIJAYAPURA
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I, Dr. Arun P Sasi, hereby declare that this dissertation entitled "Prevalence & Sociodemographic Correlates of Consanguineous Marriage in Rural Population of Vijayapura District" is a bonafide and genuine research work carried out by me under the guidance of Dr. Rekha Udgiri, M.D., Professor, Department of Community Medicine, B.L.D.E.(DU), Shri. B. M. Patil Medical CollegeHospital and Research Centre, Vijayapura.

Date: 29-06-2024

Place: Vijayapura

Dr. ARUN P SASI
Postgraduate Student,
Department of Community Medicine,
B. L. D. E. (DU)
Shri B. M. Patil Medical College,
Hospital & Research Centre,
Vijayapura.

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CERTIFICATE BY THE GUIDE

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Date: 29-06-2024

Place: Vijayapura

DR. REKHA UDGIRI M.D

Professor

Department of Community Medicine,

B. L. D. E (DU)

Shri B. M. Patil Medical College, Hospital & Research Centre, Vijayapura.

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ENDORSEMENT BY THE HEAD OF DEPARTMENT

This is to certify that the dissertation entitled— "**PREVALENCE & SOCIODEMOGRAPHIC CORRELATES OF CONSANGUINEOUS MARRIAGE IN RURAL POPULATION OF VIJAYAPURA DISTRICT**" is a bonafide research work done by Dr. **Arun. P. Sasi** under the guidance of Dr. Rekha Udgiri M.D. Professor, Department of Community Medicine at B.L.D.E (DU), Shri. B. M. Patil Medical College Hospital and Research Centre, Vijayapura.

Date: 29-06-2024
Place: Vijayapura

Dr. M. C. YADAVANNAVAR M.D.

Professor & Head
Department of Community Medicine,
B. L. D. E (D.U)
Shri B. M. Patil Medical College,
Hospital & Research Centre,
Vijayapura

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Date: 29-06-2024
Place: Vijayapura

Dr. ARAVIND V PATIL M.S.
Principal,
B. L. D. E (D.U)
Shri B. M. Patil Medical College,
Hospital & Research Centre,
Vijayapura

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Date: 29-06-2024

Place: Vijayapura

Dr. ARUN P SASI

Post Graduate Student,
Department of Community Medicine, B.L.D.E. (D.U),
Shri B. M. Patil Medical College, Hospital & Research Centre,
Vijayapura

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Date: 29-06- 2024 **Dr. ARUN P SASI**

Place: Vijayapura

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LIST OF ABBREVIATIONS

WHO	World health organization
NFHS	National Family Health Survey
IIPS	Indian Institute of Population Science
SPSS	Statistical package for social sciences
ASHA.	Accredited health social activist
BMI	Body mass index
CPI	Consumer price index

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ABSTRACT

Background:

Consanguineous marriages, defined as unions between closely related individuals, are influenced by a complex interplay of cultural, social, economic, religious, and demographic factors. Despite a decline in first-cousin marriages due to increased education, urbanization, and greater awareness of genetic risks, such unions persist due to perceived benefits like familial support, cultural continuity, and economic stability. These marriages are prevalent among communities such as Hindus, Jews, Buddhists, Christians, and Parsis in Southern and Western Asia, with significant regional variations within India. This study explores the global distribution and health impacts of consanguineous marriages, focusing on diseases such as acute lymphoblastic leukaemia, breast cancer, obesity, and rare genetic disorders. The health implications include elevated risks of genetic disorders, congenital malformations, and adverse reproductive outcomes. The National Family Health Survey indicates that Tamil Nadu and Karnataka have the highest prevalence of consanguinity in India. By examining Northern Karnataka, where limited research exists, this study fills a critical gap in the literature and raises awareness about the consequences of consanguinity. Increased understanding and community education are essential for addressing the health challenges posed by consanguineous marriages and informing future research and policy initiatives.

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Objectives

1) To assess the prevalence of consanguineous marriage in rural areas

2) To assess the socio-demographic factors associated with consanguineous marriage

Materials and methods

A cross-sectional study was conducted in Unnat Bharath Abhiyan villages (Ukkali, Donur, Yambatnal, Hegadihal, Deginal) affiliated with BLDE Shri B M Patil Medical College, focusing on ever married females aged 15-49 within the reproductive age group.

Data were collected from January 2023 to April 2023 using an interview technique with a pretested, semi-structured questionnaire. After obtaining ethical clearance, the questionnaires were translated into Kannada and pilot study was done. A thorough enumeration of all households in the villages of Yambatnal, Donur, Hegadihal, Deginal, and Ukkali was conducted to identify ever married women within the reproductive age group. Consanguineous marriages were identified, and prevalence was calculated using the formula,

$$\text{Prevalence of consanguineous marriage} = \frac{\text{Total number of consanguineous marriages}}{\text{Total number of ever-married women in the reproductive age group (15-49)}} \times 100$$

Participants were informed about the study's purpose, and informed consent was obtained, ensuring confidentiality and voluntary participation. Data collection

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involved door-to-door visits, with adjacent households approached if initial households were inaccessible. A pilot study was done in Donur village screening for 30 households, identifying 15 females in consanguineous relationships using pretested and semi structured questionnaire, after the interview minor modifications were made in the final questionnaires and they are included in the final study. The socio-demographic profile, marital status, and anthropometric measurements (height, weight, BMI), Vital parameters such as blood pressure, pulse rate were recorded, and haemoglobin levels were measured using an automated hemoglobinometer (Acon Mission Hb testing system).

Results

A total of 108 consanguineous marriages were enlisted after screening. The prevalence of consanguineous marriage obtained was 2.7%. Most of the respondents were between 24-29 years (32.4%) age group, belongs to Hindu (87%) by religion and majority of them were homemakers (96.3%). About 58.3% respondents were residing in third-generation families, 41.7% were belongs to lower-middle class, and 10.2% were illiterate. Among the respondents only 34% have the knowledge of consanguinity consequences. Cultural (80.6%) and religious (19.4%) factors were found to play a critical role. The study highlights a significant association between respondents' knowledge related to the consequences of consanguineous marriage with related to literacy level and SE status.

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Conclusion

The present study, highlights the critical roles of education, socioeconomic status, and cultural practices in influencing consanguineous marriages. We observed a decrease in these marriages compared to previous data, with literacy levels inversely related to their prevalence, suggesting education's pivotal role in reducing this practice. The findings of the present study underscore the need for a multifactorial approach incorporating educational, economic, and cultural factors to address this issue.

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INTRODUCTION

Consanguineous marriage is marriage between individuals who are closely related. This could include people related through their parents, like second or third cousins, or even closer, like uncles marrying nieces, or sometimes even people who are related but not very closely. Several studies have shown that marriage between first-degree cousins is the most common form of consanguinity.[1]

Consanguineous marriages are shaped by a complex interplay of religious cultural, social, economic, geographic, and demographic factors. The global prevalence of consanguinity and the patterns of different types of consanguineous marriages vary within and between populations according to ethnicity, culture, caste and religion. Among those residing in the southern and western regions of Asia, close-kin marriages were a common practice among Hindus, Jews, Buddhists, Christians, Parsis.[2]

The prevalence of first-cousin marriages among all consanguineous marriages presents a steady decline from one marriage cohort. The changes observed over time may be attributable to several factors such as the increase in the educational level of women, the nuclearization of the family system, the mobility from rural to urban settings, a better socioeconomic status of families, an increase in women's labour force participation in formal sectors, lower fertility rates and an increased awareness of the effects of consanguineous unions on child health in cases where there is an inherited recessive disease in the family.[3]

Consanguineous marriage may be more favourable for the women's status, including the wife's better relationship with her in-laws who could support her in time of need. There is a general belief that marrying within the family reduces the possibilities of hidden uncertainties in health and financial issues. It is believed that consanguinity strengthens family ties and enforces family solidarity, with cousin marriage providing excellent opportunities for the transmission of cultural values and cultural continuity.[4]

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National Family Health Survey - 4 (2015-2016) shows an overall prevalence of 9.9%,[1] and the NFHS-5 survey conducted between 2019 -2021 shows overall prevalence of 11%. [1]

Tamil Nadu has the highest number of consanguineous marriages with 28% while Karnataka is close behind at 27%. It is higher among the Muslim population of North India and Hindus of South India.[1]

Consanguineous marriage often shows a prevalence of girls marrying at a young age which can contribute to gynecologically immaturity, potentially resulting in adverse outcomes such as foetal death, stillbirth and elevated risk of depression among young women.[6]

As populations progress in economic terms, there is a significant increase in the total burden of disease, with the upgraded treatment of formerly lethal genetic disorders placing an ever-increasing demand on the family with urbanization and trending nuclear family patterns, consanguineous marriages in urban areas may be less in number. However, it remains culturally a major shift in the balance between social and economic benefits associated with the consanguineous marriage and health consequences, which can be attributed to the effectiveness of a community education program and increased level of education and awareness among the urban population regarding the consequences of consanguinity. The closer the biological relationship, the higher the risk.[7]

Consanguinity is also reported to be associated with miscarriages. A significant frequency has been reported between consanguinity and genetic disorders, congenital heart disease, multiple congenital anomalies, neurological malformations, chromosomal disorders and mental retardation. Recent research has also shown a genetic contribution to complex diseases. Common adult diseases like cancer, mental disorders, heart diseases, gastrointestinal disorders, hypertension, hearing deficit and diabetes mellitus were more frequent among consanguineous marriages.[8]

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Consanguinity is identified as a risk factor for congenital malformation and major developmental medical conditions. Malformations include diverse phenotypes such as polydactyly, spinocerebellar degeneration, neural tube defects, anencephaly, and encephalocele.[8] Here, we discuss the global distribution of consanguinity and the impact of consanguinity on a wide variety of different diseases using examples of acute lymphoblastic leukaemia, breast cancer, obesity, and rare genetic diseases to illustrate key messages. [9,10]

Early childhood malformations have been correlated with rates of consanguinity. consanguineous marriage is shown to have a higher level of reproductive loss, risk of abortion, and neonatal or postnatal death. However, in consanguineous populations overall there may be selection against severe recessive diseases. Many recessive genetic diseases are not compatible with life and reproduction, leading to a counter-selection of these pathogenic variants in the populations with ancient practices of consanguinity. [11,12]

There are very few literatures available related to study on community based consanguineous marriages especially in Northern Karnataka. Therefore, the present study was undertaken to create awareness of consequences regarding consanguineous marriage in rural areas.

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OBJECTIVES

- To assess the prevalence of consanguineous marriage in rural areas.
- To identify the sociodemographic factors associated with consanguineous marriage.
- To evaluate the impact of sociodemographic factors on the prevalence of consanguineous marriage in rural areas.

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REVIEW OF LITERATURE

WHO defines consanguineous marriage as one between individuals who are second cousins or more closely related. [3]

Prevalence

Consanguineous marriages showed a prevailing trend over the past three decades, with a slight increase observed from 63.0% in 1990–1991 to 67.9% in 2007–2008, followed by a gradual decline, but experienced a slight uptick in 2017–2018 in NFHS-4 survey conducted in 2015-2016 while considering the latest trend. Globally, 8.5% of children have consanguineous parents. [5,13]

The overall prevalence of consanguineous marriage was 9.9%; the South region (23%) and North-East region (3.1%) showed the highest and lowest prevalences respectively.[1]

NFHS-5(2019-21) data shows the prevalence of married (15-49) reproductive age group females in Karnataka as 59% and the prevalence of consanguineous marriage in Karnataka as 27%.[14]

Cultural factors

Sociocultural factors like preserving family structure and property, facilitating marital arrangements, improving relationships with in-laws, and financial benefits related to dowry strongly contribute to the preference for consanguineous unions. Additionally, there is a common belief that marrying within the family minimizes the risks of unforeseen health and financial issues.[3]

Geographical Variation

Consanguineous marriages are practiced in one form or another to a greater or lesser extent among the religious and ethnic groups living in India. The genetic consequences of consanguineous marriage are prevalent in most states in different degrees. The increase or decrease in consanguineous marriages varies with various factors such as geographical location, religion, caste, tribe, language, socio-economic status, education, cultural isolation, and population size.[13]

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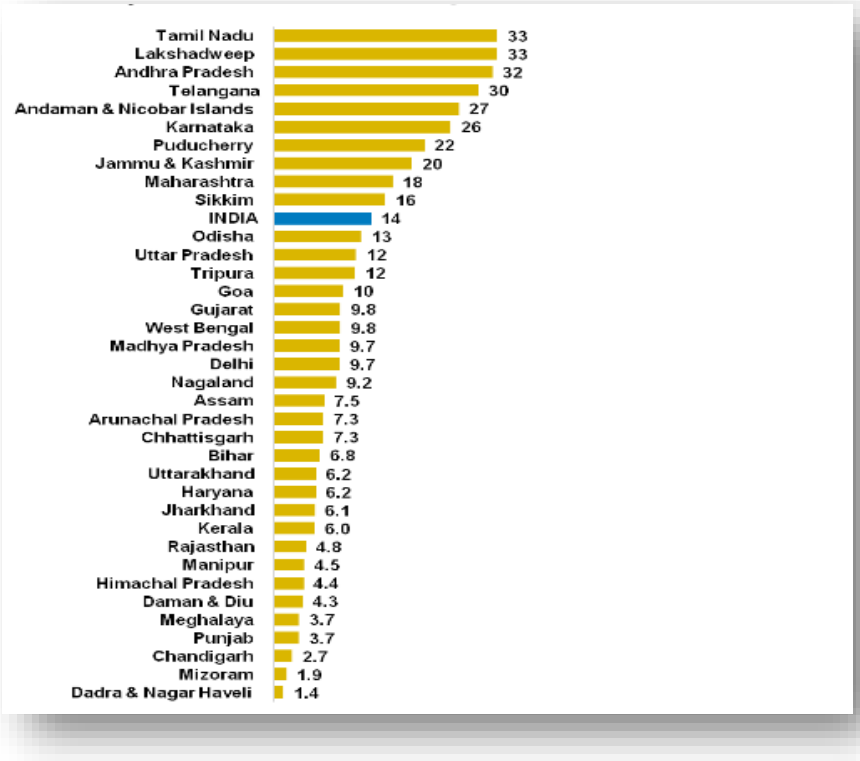

Fig 1: Percentage of ever-married woman age 15-49years

Consanguineous marriages are notably more prevalent among women in all Southern states except Kerala, with over one-fourth of women in Tamil Nadu, Andhra Pradesh, and Karnataka, and nearly one-fifth in Telangana and Puducherry reporting such unions. (Fig -1).[12]

Religious variation

The types of consanguineous marriages vary among different religious groups in terms of religious affiliations, Christians showed the lowest rates of inbreeding as there is a strict restriction on close-knit marriage in Christianity. The highest rate was recorded among the Muslim population.[12]

Mohini.*et.*al.,2016 conducted a community cross-sectional study at the Khaja Banda Nawaz Institute of Medical Sciences in Kalaburagi, Karnataka, from April 1, 2015, to June 30, 2015. They enrolled 130 families and found that consanguineous marriage was notably more prevalent in Muslim joint families.[15]

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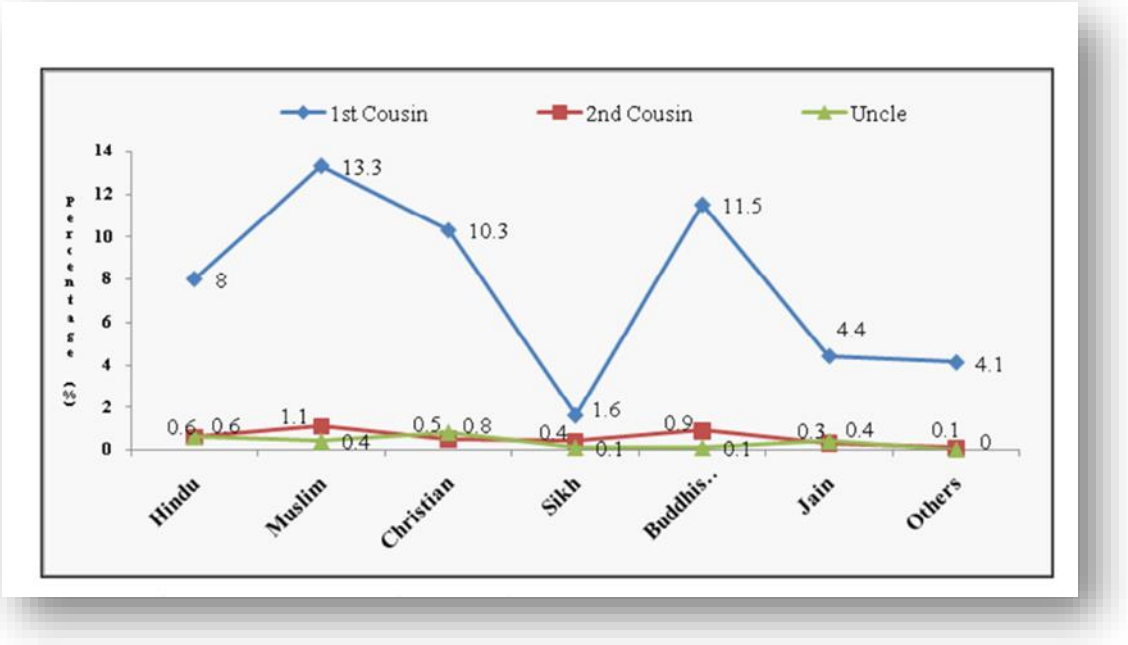

Fig 2: Distribution of types of consanguineous marriage practice by different religious groups of India

The frequency of inbreeding is reported high among the Asna Ashariya, Shiekh Sunni, Dawoodi Bohra, and Muslims of Delhi and West Bengal. The Muslim community practices the highest rate of consanguineous marriage, and it is comparatively low among the Hindus (Fig-2).[12]

Socio-Demographics correlates of consanguineous marriage

Consanguineous marriage is associated with sociodemographic correlates including occupation, literacy and income shows there is an interconnectedness between all sociodemographic factors with consanguineous marriage. [3]

Increased health literacy, particularly regarding health issues, self-care, and disease prevention, enhances understanding of personal risk factors and informs decision-making processes. Women in consanguineous unions typically exhibit lower levels of education, early marriages and early childbearing. Consanguineous marriages are predominantly reported in rural areas and among communities characterized by low socioeconomic status.[3].

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Nikhil Joseph.*et.*al.,2015 *in* a community-based study, concluded that the prevalence of consanguineous marriage was higher among illiterates. The mean age at marriage was found to be lower among the women in consanguineous marriages.[16]

Fauzia. *et.*al., 2018 conducted a cross-sectional descriptive study at a tertiary care hospital in Islamabad, enrolling 300 women. The study revealed that literacy rates were lower among consanguineous participants. Additionally, the study found a significant association between educational status and consanguineous marriages.[17].

Sarosha .*et.*al.,2020 provides valuable insights into the evolving sociodemographic characteristics in Pakistan and their impact on consanguineous marriages. Over the four PDHS waves from 1990 to 2018, significant improvements in education, urbanization, age of marriage, and socioeconomic status were observed. The study concludes that these factors collectively contributed to a decline in the prevalence of consanguineous marriages as education, urban development, and an increase the age of marriage.[18]

An article in the Times of India reported on consanguineous marriages based on the NHFS-5 conducted by the International Institute of Population Sciences (IIPS), Department of Family and Generations. The study observed that consanguineous marriages are more prevalent in South India. It highlighted that children born from such marriages can inherit genetic and mental health disorders but noted a decline in such marriages due to increased education among women and awareness of the medical consequences. [19]

The study by Asifa Kamal.*et*.al.,2015 provides valuable insights into the factors influencing consanguineous marriages in Pakistan. Education, urbanization, and an increase in the age of marriage are significant determinants that contribute to the reduction of consanguineous unions. These findings are consistent with global trends, highlighting the importance of promoting education, urban development, and delaying marriage age as strategies to reduce the practice of consanguinity and its associated health risks.[20]

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The study by Zalan.*et.*al.,2023 provides important insights into the prevalence and sociodemographic determinants of consanguineous marriages among the Arab youth in Israel. They observed that the rate of Consanguineous marriage was inversely proportional to educational status, income level, and employment status. The percentage of couples with ≥5 children in the Consanguineous marriages (8%) was higher than those couples in the non-consanguineous marriages (4.6%). The women-related fertility factors were significantly associated with consanguineous marriages. The findings in their study underscore the need for targeted educational and public health interventions to address the associated health risks.[21]

Nazish Jabeen and Sajid Malik 2014 conducted a retrospective questionnaire-based study carried out for nine months from January 2010 to September 2010 in Bhimber District, Azad Jammu and Kashmir, Pakistan, with A total of 1,584 married females originating from three tehsils and 24 sampling sites of Bhimber district were randomly recruited. in his study, he observed that 62% of the total marriages were First-cousin unions. Consanguinity was witnessed to be rising with increasing literacy levels. Additionally, consanguinity was observed to be associated with ethnicity, family structure, language, and marriage arrangements.[22]

Muhammed Afzal.*et.al*., 2016 conducted a study in six different localities of Uttar Pradesh from 1988 to 1993. The results of the study indicated that each of the nine groups studied had a strong preference for consanguineous marriage, and there were significant differences in the distribution of these groups.[23]

Hafiza Fizzah.*et.*al.,2016 conducted a cross-sectional study in Rahim Yar Khan District, Southern Punjab, Pakistan, with a total of 2174 married females selected randomly. In their study, they observed, The Consanguineous union was observed to be significantly higher in subjects originating from rural areas, speaking the Saraiki language, illiterate or having a religious/Madrasa education only, and belonging to a nuclear family type. The rate of consanguinity was also higher in subjects whose husbands

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were engaged in unskilled manual or skilled manual jobs and had consanguinity in the parental generation.[24]

Grades of consanguinity

Marriages involving paternal and maternal first cousins declined from 1990 to 2013.[12]

Ghosh Saswta.*et.*al.,2021 conducted a community-based cross-sectional study encompassing all states and union territories in India, with a total of 493,927 participants. The study revealed that the South had the highest rates of consanguineous marriages, while the North-East had the lowest. First-cousin marriages were more common than a second-cousin or uncle-niece marriages. Women from urban nuclear families were less likely to marry their cousins.[1]

Mazharul M.*et.*al.,2017 conducted a community-based cross-sectional study which concluded that there is a very high prevalence of consanguineous marriage in Oman, with 52% of marriages being consanguineous. Among these, first-cousin unions were particularly common, constituting around 39% of all consanguineous marriages.[25]

Rajesh Sharkia.*et*.al., 2008 conducted a cross-sectional study in 2009 to determine the prevalence and trends of first-cousin marriage types over a period of two generations in Arab society in Israel. They employed a multistage design for sampling. A total of 3173 marriages were considered and divided into two generations based on the time period in which the marriage occurred: generation 1 from 1948 to 1979 and Generation 2 from 1980 to 2009. The study shows, the prevalence of first-cousin marriage types was found to be decreasing but still was most predominant among the various consanguineous marriage types. Among the first-cousin marriage types, the paternal subtype was reported to be the favoured one in the two generations. The study concluded that first-cousin marriage was still the preferable type in the Arab community of Israel.[26]

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Abdulla Gunaid.*et*.al.,2004 conducted a cross-sectional study during the late part of the year 2000, aiming to assess the rate of consanguineous marriage and the average coefficient of inbreeding in Sana'a City, Yemen. The study included a total of 1050 wives and husbands. The study revealed that the incidence of consanguinity is relatively high in Yemen, with predominantly first-cousin marriages. This prevalence might be attributed to the deeply ingrained social and cultural beliefs in the country.[27]

Yasmin Abdu.*et*.al.,2023 conducted an analytical cross-sectional study between October 2022 and December 2022 at three primary health centres under the Primary Health Care Corporation. They interviewed 395 Qatari adults aged 18–35 who attended primary healthcare institutions in Qatar. The study revealed that the prevalence of consanguineous marriage among married couples was 62.6%, with the majority of these marriages (81.7%) being to first cousins. The study concluded that the prevalence of consanguineous marriage is high in Qatar among the Qatari population, and this requires an immediate need for community-based campaigns to raise public awareness about the problem and its potential impact.[28]

Impact of consanguinity

M. B. Bellad.*et*.al.,2012 led a prospective cohort study on 647 pregnant women from four primary health center areas in Belgaum district, Karnataka, India. The study revealed that study found that consanguineous marriages had a higher incidence of miscarriages, stillbirths, and low birth weight infants. Low birth weight was particularly notable in the study.[29]

MV Sudhakaran.*et*.al.,1998 conducted a cross-sectional study in Alappuzha on the Sunni sect of Muslims. They assessed a total of 515 marriages, of which 10.68% were consanguineous. The study found that consanguineous marriages were associated with a higher distribution of physical, mental, and sensory defects. Additionally, an increased number of morbidities were observed in consanguineous.[30]

Mohammed A. Ablangi.*et*.al.,2023 conducted a cross-sectional study in Albaha, Saudi Arabia, involving 1010 participants. The study revealed that 40% of participants were in consanguineous marriages,

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primarily first-cousin unions. Children born from these unions showed higher risks of cardiovascular diseases, blood disorders, cancer, hearing loss, speech disorders, and ophthalmic diseases. The study recommended implementing educational programs to raise awareness about the consequences of consanguineous marriages and expanding premarital screening programs to include more tests for common hereditary diseases associated with consanguinity.[31]

King Abdulaziz Medical City in Riyadh 2023 conducted a study aimed to determine the prevalence of genetic disorders within the non-consanguineous population of Saudi Arabia. By analysing exome sequencing requests associated with pathogenic or likely pathogenic variants, researchers found that 18% of non-consanguineous individuals harboured disease-causing variants. These variants, totalling 28 in 27 individuals, included a mix of de novo and inherited mutations. The study observed hit rates of 42.8% for autosomal recessive disorders, 46.4% for autosomal dominant disorders, and 10.7% for X-linked disorders. It concluded that non-consanguineous unions carry a reduced risk of genetic disorders, suggesting that decreasing consanguinity could halve to a third the risk of such disorders. [32]

The case-control study, conducted in Erbil City,2018 Iraq, at the Maternity Teaching Hospital, aimed to assess the influence of consanguinity on maternal and neonatal health outcomes. Despite finding a lower mean age among pregnant women with consanguinity compared to those without, there were no significant differences in parity, educational level, or mean gestational age between the two groups. Additionally, consanguinity did not lead to higher rates of stillbirth, preterm labour, miscarriages, or twin pregnancies in the sample population studied. Thus, the study suggests that consanguinity does not significantly affect reproductive outcomes.[33]

V. Rami Reddy.*et.*al.,1978 conducted a study among the Pattusalis in the Chittoor district in Andhra Pradesh, comprising 256 families. The study revealed that the study population primarily engaged in first-cousin marriages. They found that pre- and post-natal mortality rates and birth defects were higher in consanguineous unions. Additionally, an analysis of age groups in consanguineous and non-consanguineous marriages, as well as early marriage, showed no significant effect on fertility.[34]

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Saed Anwar.*et.*al.,2020 conducted a study in Bangladesh from June 2017 to May 2019, involving 7,312 families, of which 3,694 were consanguineous families. The study found that gross fertility was higher among families compared to non-consanguineous families. Child mortality was significantly higher in consanguineous families. Additionally, consanguineous was associated with congenital malformations such as bronchial asthma, hearing defects, heart diseases, and sickle cell anemia. [35]

Nath A .*et.*al.,2023 conducted a community-based cross-sectional study in Shindoli village, where they found a prevalence of consanguineous marriage among 36%. The majority of these marriages were between first cousins. Additionally, the study observed a higher rate of foetal loss in consanguineous marriages. Surprisingly, over 7% of the population surveyed were only aware of the hazards associated with consanguineous marriages. [36]

An interventional cross-sectional study conducted by Suman Sheelavantar.*et.*al.,2022 conducted in a government high school in a rural village of Nagur, Bagalkot District, Karnataka. A total of 121 students participated in the survey. After two months of intervention, significance was found with an increase in the knowledge regarding the effects of consanguineous marriage on women's health and the association between consanguineous marriage and certain disorders. The study concluded that Knowledge regarding consanguineous marriage and its effect on pregnancy outcomes was poor among school students.[6]

Saleem.*et.*al.,2024 conducted a cross-sectional study in the Mellor taluk of Madurai district in 2015, collecting 750 samples. The study concluded that the prevalence of consanguinity marriage is relatively high in South India. Moreover, pregnancy outcomes such as abortion, stillbirth, congenital anomalies, infant, and neonatal death were more common among consanguineous marriages compared to non-consanguineous ones. [37]

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MATERIALS AND METHODOLOGY

Study area: The study was conducted in the households of Unnat Bharath Abhiyan villages enrolled by the BLDE Shri B M Patil Medical College.

Study population: The study participants were ever married females (15-49) in reproductive age group residing in Unnat Bharath Abhiyan villages.

Study design: Cross-sectional study.

Study period: March:2023-April:2024

Study technique: Interview technique with pretested, semi-structured questionnaire.

Study Tool

A semi structured pre-tested questionnaire was developed (annexure-1) This questionnaire covered various sociodemographic aspects including name age address occupation educational status, religious affiliation, average monthly income, family type, marital status and health profile of the participants

Study Method

After obtaining institutional ethical clearance from the ethical committee, all questionaries were made in English and then translated into the local language (Kannada) and administered after the pilot study. The study's purpose was explained to the participants prior to administering the questionnaire, and informed consent was obtained.

Data was then collected using a pretested semi-structured questionnaire. A thorough enumeration of all households in Unnat Bharath Abhiyan villages (Yambatnal, Donnur, Haggadical, Deginal, Ukkali) was conducted, to enlist all married women within the reproductive age group. Subsequently, consanguineous marriages were identified to obtain the prevalence of consanguinity employing the designated formula,

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$$\text{Prevalence of consanguineous marriage} = \frac{\text{Total number of consanguineous marriages}}{\text{Total number of ever-married women in the reproductive age group (15-49) years}} \times 100$$

The purpose and overview of the study were explained at the time of the interview. Participants were informed that their participation was entirely voluntary; they could withdraw from the study any time, and the information they provided would be used only for the analysis. Confidentiality about data and findings was assured to the participants, and their consent was taken.

Study participants were chosen from households in Unnat Bharath Abhiyan villages affiliated with a tertiary care hospital. Participants were selected from Yambatnal, Donnur, Hegadihal, Deginal, and Ukkali. Data collection occurred through door-to-door visits, employing interview techniques to gather information from females aged 15-49 or any available household members, using a pretested semi-structured questionnaire. Consent was obtained from all consanguineous females those who were interviewed. Adjacent households approached if permission was denied or the household was inaccessible

Pilot study:

A preliminary investigation was conducted in Donnur village, involving 30 households, from which 15 females in consanguineous relationships were identified and included in the final study. Subsequently, a final questionnaire was formulated, incorporating slight modifications from the initial version, and the study progressed accordingly.

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Table 1: Number of households to be selected in all villages

Villages	No of households	Total population [38]
Donor	520	2761
Ukkali	1515	8519
Yambatnal	400	2257
Deginal	223	1112
Hegadihal	363	1929
Total	3039	16578

Collection of data:

House visits were done in the enrolled villages, and the interview was conducted in local languages (Kannada) with the help of the ASHA workers and medico-social workers. Each house interview took approximately 20-25 minutes. Information regarding sociodemographic profile, marital status, anthropometry and general and physical examination like height, weight, and Body mass index. using standard operating procedures were performed. Vitals parameters like Blood pressure, and Pulse rate. were recorded, and the estimation of haemoglobin was done in study participants using an automated hemoglobinometer ((brand -Acon mission Hb testing system).

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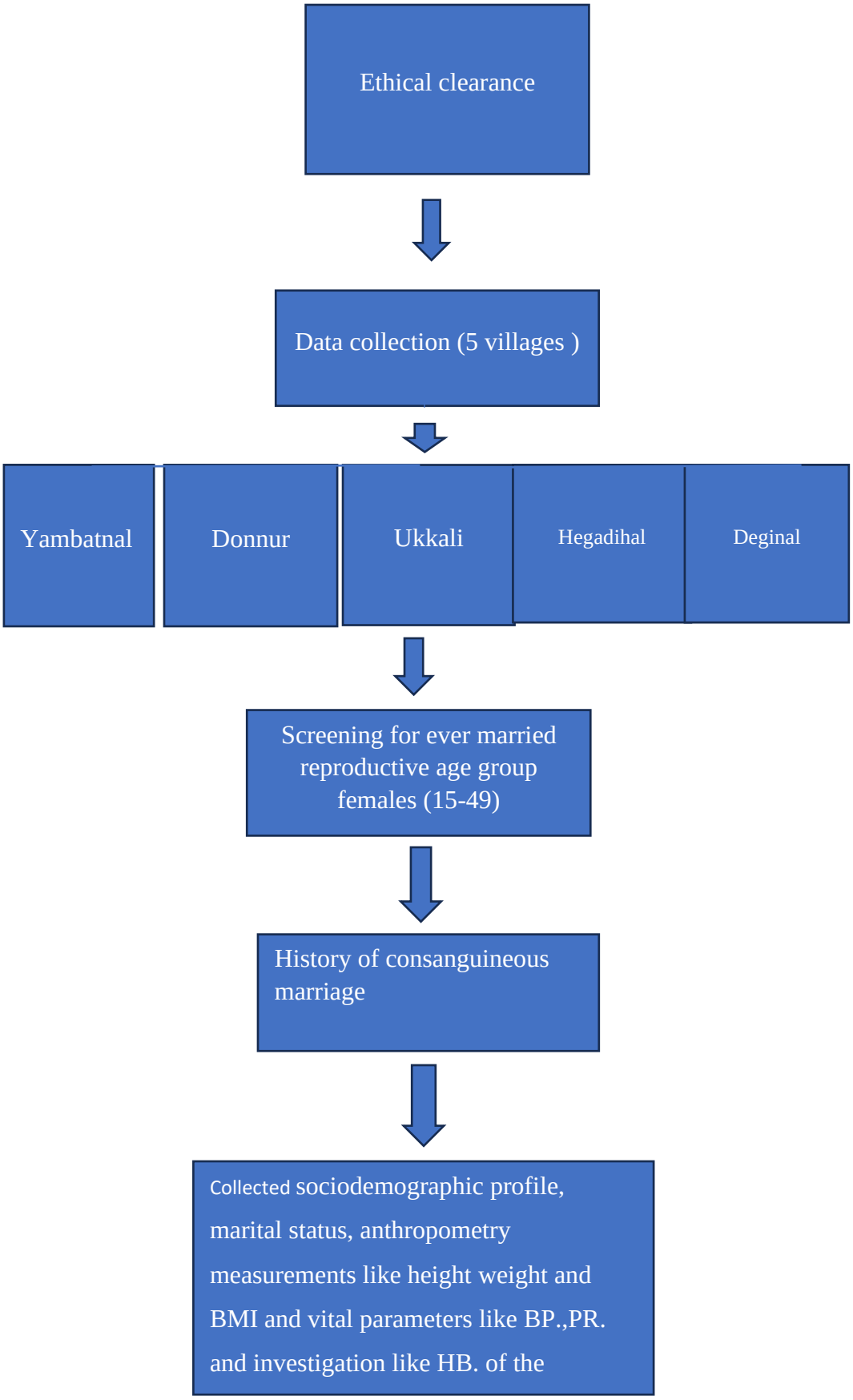
Study roadmap



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Inclusion Criteria: All ever married Women in the reproductive age group (15 – 49 years) and permanent residents of that area.

Exclusion Criteria: Those who are not married and not willing to give consent for the study.

Statistical analysis

The data obtained was entered in a Microsoft Excel sheet, and statistical analysis were performed using statistical package for the social sciences (Version 2). Results are presented as Mean ±SD, Median and interquartile range, frequency, percentages and diagrams. Association between Categorical variables was computed using the Chi-square test. P value at 0.05 will be considered statistically significant.

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STUDY VARIABLES

Age: Age was recorded in completing years as revealed by the subjects.[38]

Type of family [39]

- **Nuclear family**: When the family unit consists of husband, wife and children it is called a nuclear family.
- **Joint family**: This family can be considered as a lateral extension of the nuclear family. It consists of nuclear families of siblings (brothers in the patrilocal system and sisters in the matrilocal system), and the eldest brother/sister has the position of authority.
- **Three-generation family**: This is similar to a joint family, but the reason for a married son living with the parents is economical and not social.

Education [40]

- **Illiterate**: Not able to read and write and understand in any language.
- **Primary school:** Studied up to 7th Std.
- **High school:** Studied from 8th standard to SSLC.
- **PUC and above**: Studied up to PUC and above

Occupation [41,42]

- **Labor:** The person engaged in such activities like agricultural and non-agricultural working for wages.
- **Homemaker**: One who manages a household, especially as a spouse and parent.
- **Farmer:** A person who farms; person who operates a farm or cultivates land.
- **Daily wages**: Any person who is employed in any public service on the basis of daily Payment.

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Socioeconomic status:

Self-reported per capita monthly income was recorded. Modified B. G. Prasad classification was used to assess the social class of the study participants.

Modified B G Prasad Classification for May 2023[43]

MODIFIED BG PRASAD CLASSIFICATION FOR MAY 2023			
Social Class		**Per-capita income (in INR) as per original classification in 1961**	**Per-capita income (in INR) as per modified classification for May 2023**
Upper		**≥100**	**8763 and above**
Upper middle		**50-99**	**4381.5-8675.3**
Middle		**30-49**	**2630-4294**
Lower middle		**15-29**	**1314.5-2541.27**
Lower		**≤15**	**<1314.5**

- Current value of consumer price index of May 2023 = 133.3
- Multiplication factor -current value /base value = 133.3/100=1.333
- New income value = mf x old value x4.63x4.93
- The linking factors for 1982and 2021 were 4.93 and 4.63 respectively.

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Anthropometric measurements

Measurement of height

To measure the size, study subjects were made to remove footwear and stand with heels together and toes apart and their head positioned against the wall. The hands were hung freely by the sides, with the director, back, buttocks, and heel in contact with the wall. A wooden scale was brought down to a topmost point on the head, and a marking was made on the wall. Measurement was taken using measuring tape.[44]

Measurement of weight:

The weight was measured in kilograms (kg) using a standardized digital weighing machine with the subject standing erect on the center of the platform, with the body weight evenly distributed between both feet together and toes apart without footwear with accepted clothing and looking straight ahead. [45]

calculation of BMI.

BMI: BMI calculated from the height and weight using the NHLBI BMI calculator. [43]

Classification of BMI [46]

CLASSIFICATION	BMI
Underweight	**<18.5gm**
Normal range	**18.5-24.99gm**
Overweight	**>25.00gm**

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Vital parameters

Measurement of blood pressure by Sphygmo-Manometer [47]

The participant is asked to loosen any tight clothing or remove long-sleeved garments so that it is possible to access the upper arm. The participant's arm is secured on a surface level with their associate. The stethoscope is then placed over the brachial artery in the bend of the elbow, and the pulse is heard. The cuff is pumped slowly and noted when the pulse disappears. The sound is called the Korotkoff's sound. This indicates that we should stop inflating the cuff, which is deflated slowly while the mercury level sphygmomanometer is observed. The sphygmomanometer reading is noted when the pulse reappears, which is recorded as the systolic pressure. The cuff is deflated further until the pulse disappears.

Classification of Hypertension [48]

CATEGORY	SYSTOLIC	DIASTOLIC
Optimal	<120	<80 mmhg
Normal	120-129mmhg	80-84 mmhg
High Normal	130-139mmhg	85-89 mmhg
Grade -1 Hypertension	140-159mmhg	90-99 mmhg
Grade 2 Hypertension	160-179 mmhg	100-109 mmhg
Grade 3 Hypertension	>180 mmhg	>110 mmhg
Isolated Systolic Hypertension	>140mmhg	<90 mmHg

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Investigation

Estimation of Haemoglobin:

Estimation of Haemoglobin by automated haemoglobin meter (brand -Acon mission Hb testing system) [47]

Measurement of haemoglobin by automated haemoglobinometer

The haemoglobinometer was turned on by holding the power button for 3 seconds. A fresh strip was inserted into the meter, and a drop of blood film was displayed on the screen. The tip of the finger of the participant was pricked with a lancet, after which the first two drops were wiped out, and the third drop placed on the machine showed results within minutes. [51]

WHO criteria for Anaemia [48,49]

PARAMETERS	NORMAL	MILD	MODERATE	SEVERE
Female	**≥12gm/dl**	**11-11.9gm/dl**	**8-10.9gm/dl**	**<8gm/dl**

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Consanguinity:

Definition: Consanguinity can be defined as a marriage in the same kinship group and as a union between two spouses who are related biologically. [51]

Different grades of consanguinity [52]

- **1st degree** – Marriage between the siblings (Marriage between the brother and sister, non identical twins, parents and children.
- **2nd degree** – Marriage between the uncle and aunt, niece and nephew, grandparent's half brothers and sisters.
- **3rd degree** – Marriage between the first cousins half uncles and aunts, half nephew and niece.
- **4th degree** – Marriage between the second cousins or between the people with a relationship beyond the second cousins or a far-off relationship, all fall under the category.

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Fig 3 given below explains the different degrees of consanguinity [53]

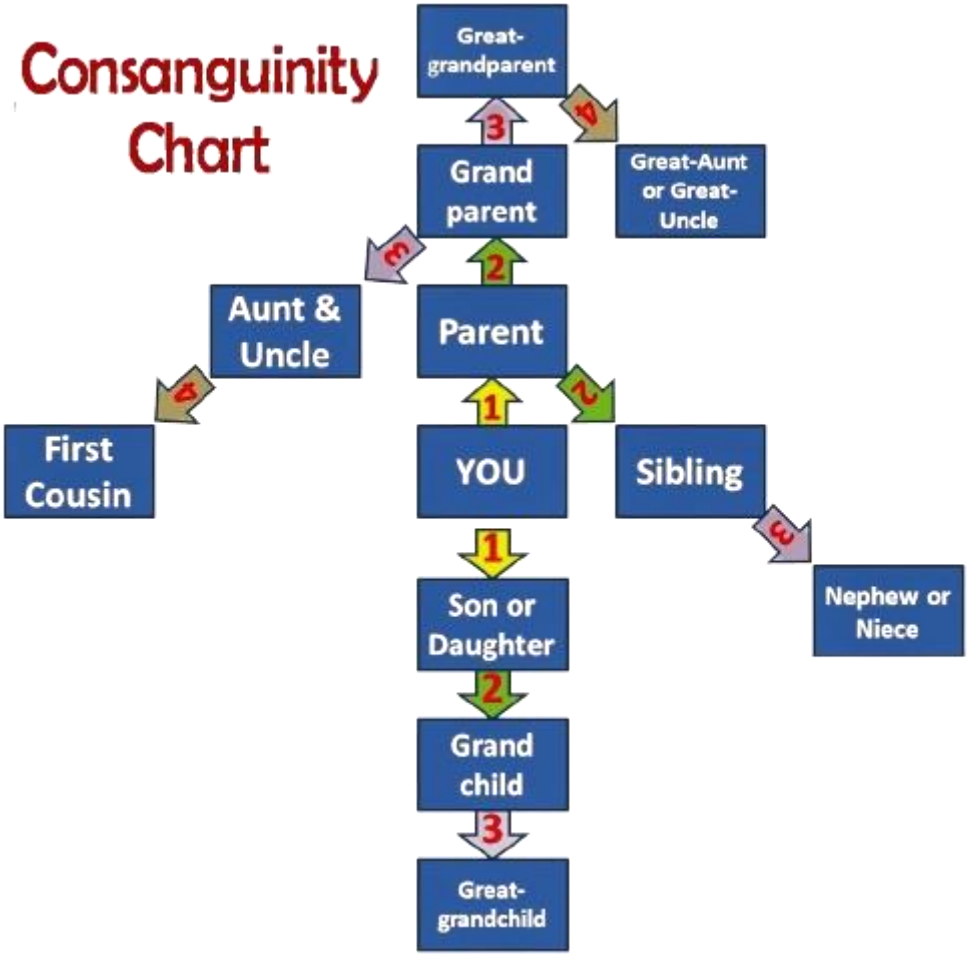

Fig -3 Degree of consanguineous marriage

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RESULTS

Table 2: Distribution of Households, Ever Married Females in Reproductive Age (15-49), and Consanguineous Marriages in Selected Villages

Villages	No of households	No of ever married females in reproductive age group (15-49)	Consanguineous Marriage
Donor	500	608	24
Ukkali	1515	2080	32
Yambatnal	400	511	27
Deginal	261	292	10
Hegadihal	363	410	15
Total	**3039**	**3901**	**108**

A community Based cross sectional study conducted for one year in Unnat Bharath Abhiyan enrolled villages (Yambatnal, Donor, Ukkali, Hegadihal, Deginal). Screening has done in 3901 ever married females in the reproductive age group (15-49) years. Among them 108 females were found with history of consanguineous marriage.

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Prevalence

A community-based cross-sectional study was conducted in Unnat Bharath Abhiyan enrolled villages (Ukkali, Hegadihal, Donor, Deginal, and Yambatnal) among the ever-married reproductive (15-49) age group females. A total of 3039 houses were covered and 3901 ever married females in the reproductive (15-49) age group were interviewed.

Prevalence of consanguineous marriage in present study

$$\frac{\text{Total number of consanguineous marriages}}{\text{Total number of ever-married women in the reproductive (15-49) age group}} \times 100$$

108/3901x 100 = 2.7%

The prevalence of consanguineous marriage in this study found to be 2.7%

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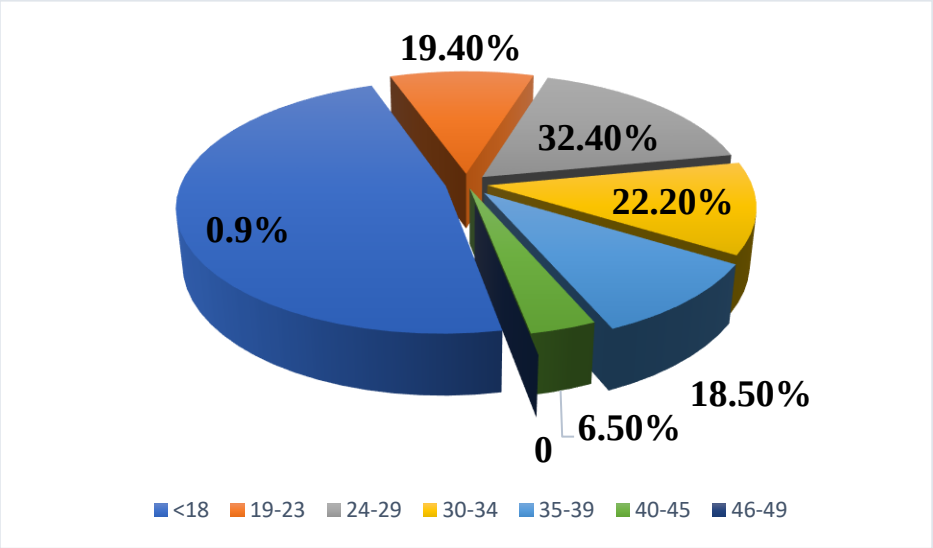
Fig 4: Distribution of respondent's age



The above figure shows the majority of the participants were between 24-29 years (32.4%), of age group followed by 30-34 years (22.2%), and 19-23 years (19.4%). The population includes fewer individuals under 18 years (0.9%), and none of the participants were in the age group of 46-49 age group.

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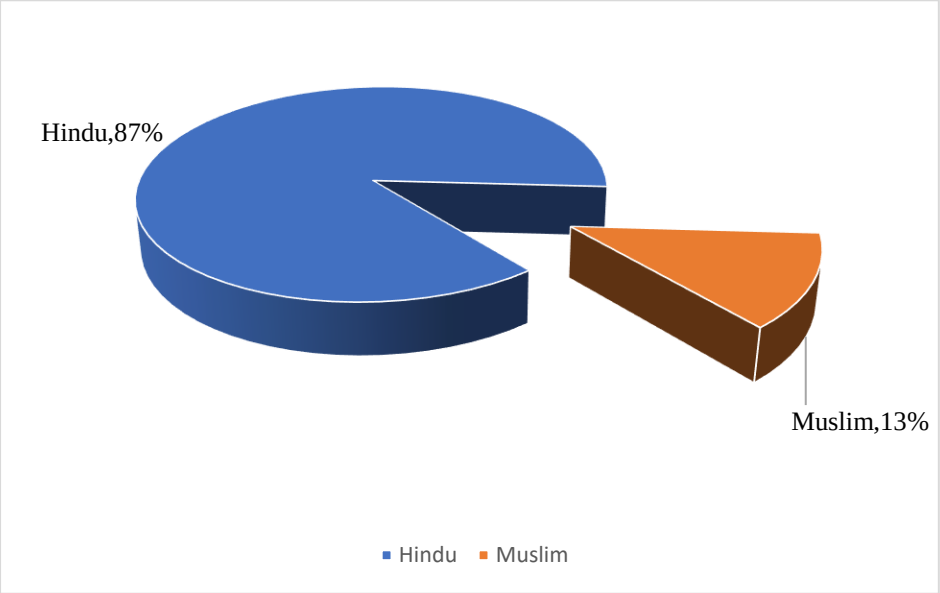
Fig 5: Distribution of respondent's religion



Above figure indicated Hindu participants (87%) were predominant in our study, and 13% of were Muslims.

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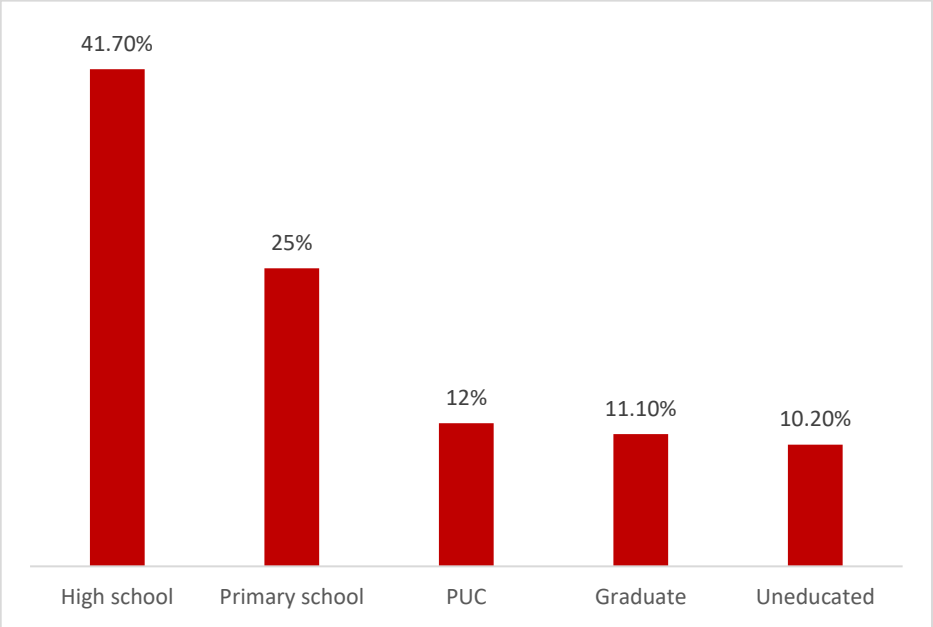
Fig 6: Distribution of respondent's education



Education levels of the participants vary, with 41.7% having completed high school, 25% having attended primary school, 12% having completed Pre-University Course, 11.1% being graduates, and 10.2% being illiterate.

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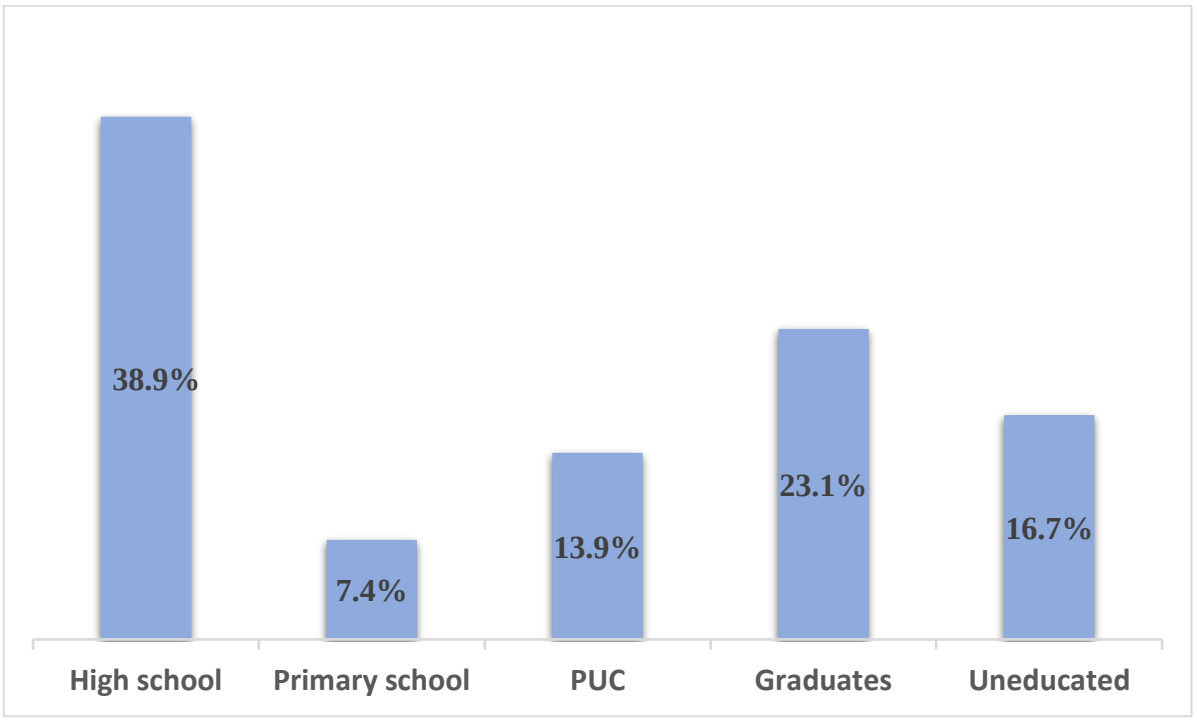
Fig 7: Distribution of spouse education



Regarding spouses' education, 38.9% have completed high school education, 23.1% are graduates,16.7% are illiterates followed by 13.9% have completed Pre-University Courses, and 7.4% have attended primary school.

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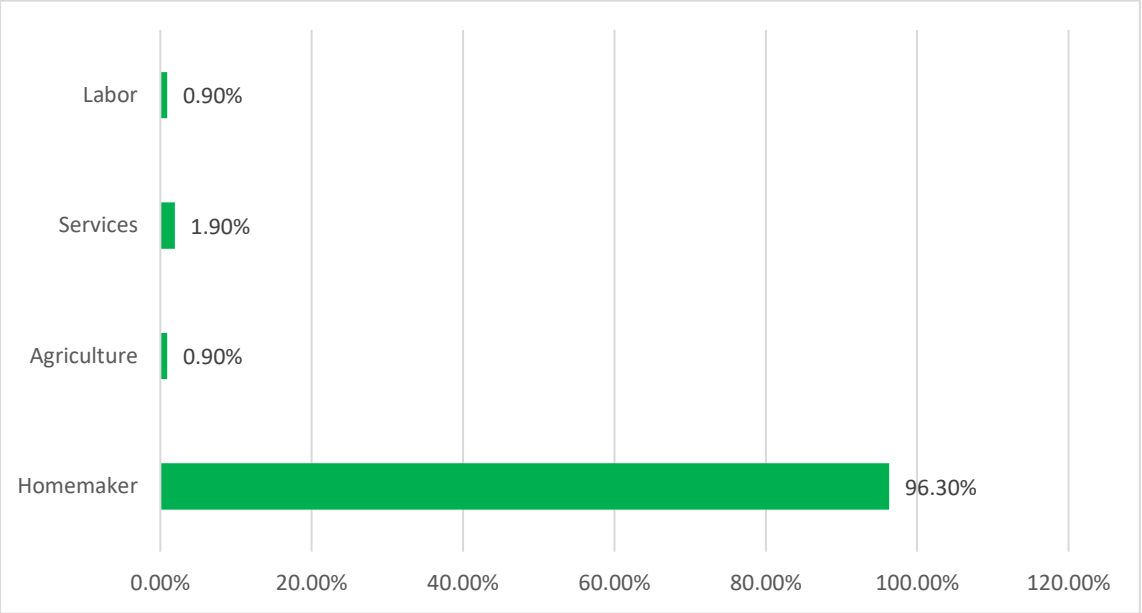
Fig 8: Distribution of respondent's occupation



In the present study, 96.3% of the participants are homemakers, with a small fraction engaged in agriculture (0.9%), services (1.9%), and labor (0.9%) by occupation.

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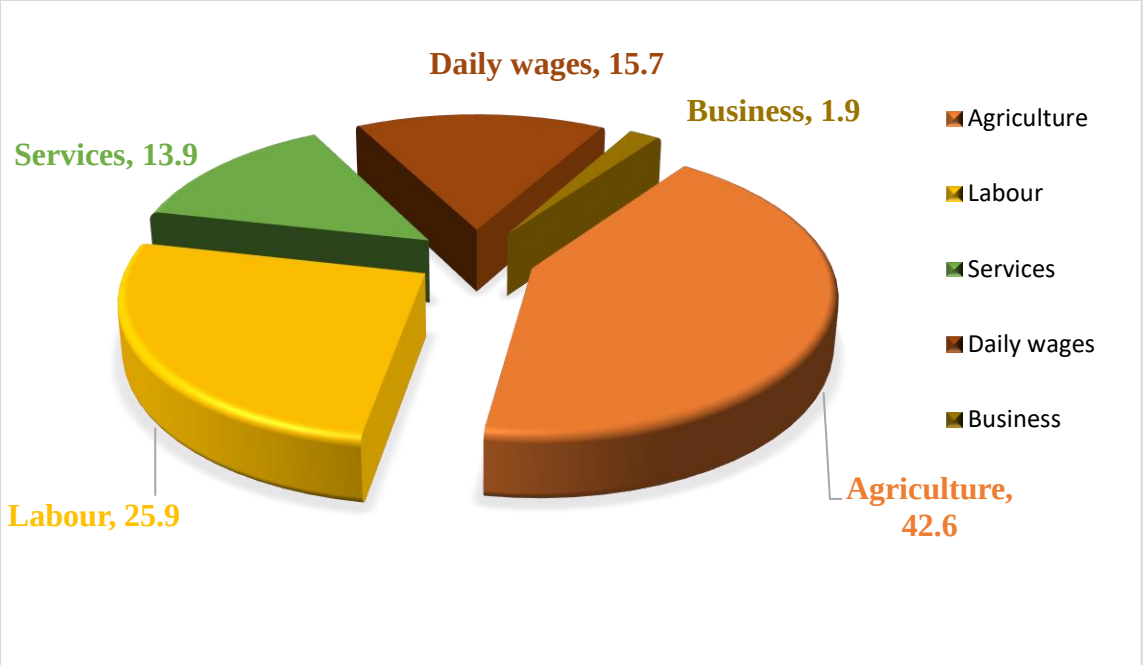
Fig 9: Distribution of spouse occupation



The spouse occupations predominantly include agriculture (42.6%), labor (25.9%), services (13.9%), daily wages (15.7%), and business (1.9%).

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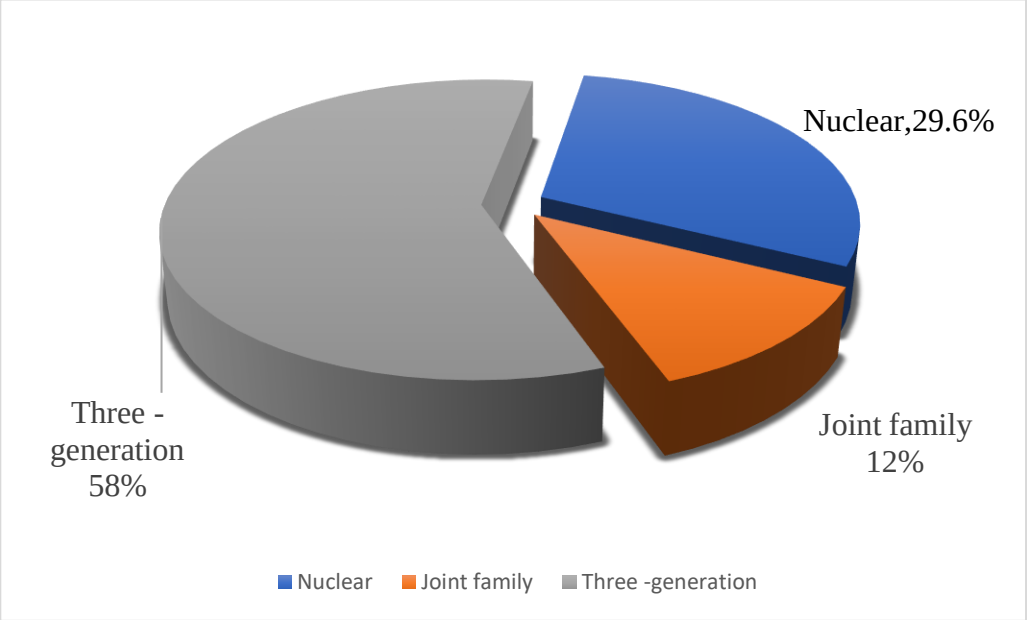
Fig 10: Distribution of respondent's family structure



Family structures show that 58.3% live in three-generation families, 29.6% in nuclear families, and 12% in joint families.

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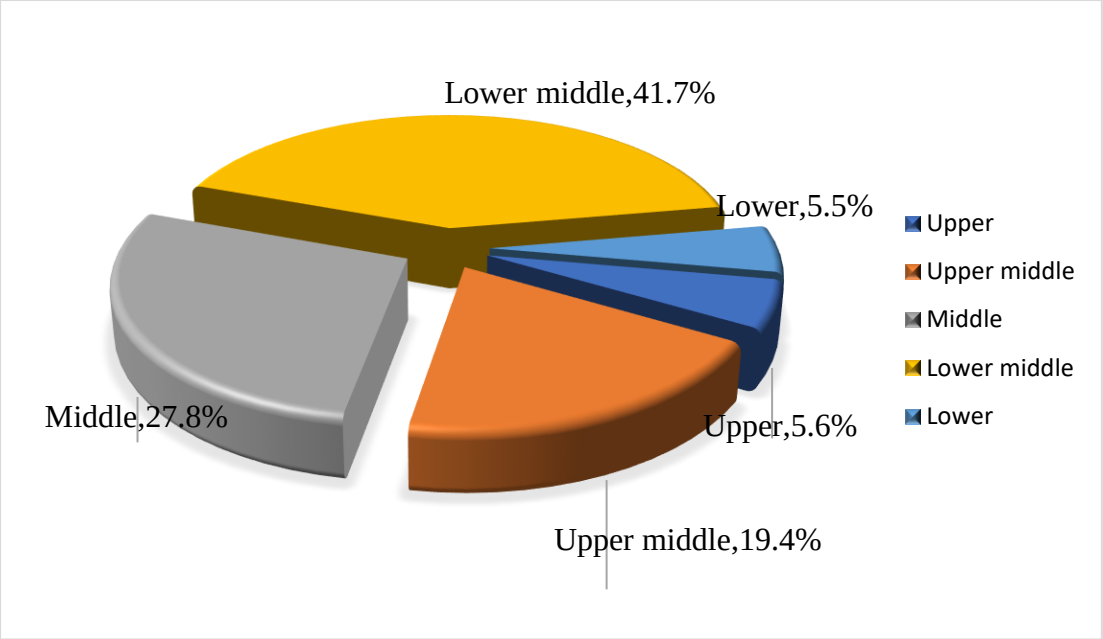
Fig 11: Distribution of respondent's socioeconomic status



Among the participants, with regards to socioeconomic status, 45% belong to the lower middle class, followed by 30% in the middle class, 19.4% in the upper-middle, whereas 5.6% belong to both upper and lower socioeconomic status according to modified B G prasad classification. [36]

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Table 3: Distribution of Marital and reproductive status of the respondents

Parameters	Variables	Frequency	Percent
Marital status of the respondents	**Married**	103	95.3
	Widowed	4	3.7
	Divorced	0	0
	Separated	1	0.9
Total		**108**	**100**
Duration of marriage	**1-3years**	19	17.6
	4-6years	13	12.0
	7-9years	16	14.8
	>10years	60	55.6
Total		**108**	**100%**
Age at marriage	**< 17years**	10	9.3%
	18 – 20years	62	57.4%
	21 – 22years	31	28.7%
	23-25 years	3	2.8%
	>26 years	2	1.8%
Total		**108**	**100%**
Age of first delivery	**≤20 years**	68	63.0
	21-23 years	28	25.9
	24-27 years	4	3.7%
	NA	8	7.4%
Total		**108**	**100%**
Number of children	**≤ 2**	70	64.8%
	3-4	30	26.9%
	NA	8	7.4%
Total		**100**	**100%**
In this table we have depicted (NA) for the participants who did not have children.			

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In our study, among 108 married females, 3.7% were widowed, and 0.9% were living separated from their husbands.

Regarding the duration of the marriage, the majority of the respondents had a married life of more than 10 years (55.6%), followed by 1-3 years (17.6%) and 4-6 years (12%).

Among the study participants, the majority of individuals were married between the ages of 18-20 years (57.4%), followed by 21-22 years (28.7%) and 17 years (9.3%).

Among the study participants, the majority of them had their first child at the age of 20 years (63%), followed by 21-23 years (25.9%).

A maximum number of the participants had up to 2 (64.8%) children in our study, 26.9% of them had 3-4 children, and 7.4% of them didn’t have any children.

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Table 4: Distribution of Respondents' Knowledge and Practice Regarding Family Planning Methods

PARAMETERS	Variables	Frequency	Percent
Participant's knowledge with relation to family planning methods	Tubectomy /intrauterine device	13	12.0
	Tubectomy/condoms	18	16.7
	Tubectomy	77	71.3
Total		**108**	**100**
Distribution of the different family planning methods used by the participants	Yes	31	28.7
	No	77	67.6
Total		**108**	**100**
Distribution of the contraceptive methods among the respondents	Tubectomy	28	25.9
	Barrier method (condom)	3	2.8
Total		**31**	**28.7**

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The present study observed that all of the participants had knowledge regarding family planning methods. 71% knew about tubectomy, 16% had knowledge about tubectomy and condom-like barrier methods, and 12% had knowledge about tubectomy and intrauterine devices. Additionally, 28.7%% of the study participants have actively adopted various family planning measures, with tubectomy emerging as the overwhelmingly preferred method. Among the participants, those who adopted various family planning methods, 28.7% adopted tubectomy.

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Table 5: Distribution of respondent's knowledge regarding the outcome of consanguineous marriage

Parameters	Variables	Frequency	Percent
Respondents' knowledge Regarding the consequences of consanguineous marriage	Yes	37	34.3
	No	71	65.7
Total		**108**	**100**
Source of information regarding the consequences of consanguineous marriage among the respondents	Relatives	20	18.5
	Friends	7	6.5
	Health Professionals	7	6.5
	Radio/tv	3	2.8
Total		**37**	**34.3**
Reason for consanguinity	Cultural	87	80.6
	Religious	21	19.4
Total		**108**	**100**
Variation in Consanguinity Grades Among Participants	1st degree	0	0
	2nad degree	48	44.4
	3rd degree	57	52.8
	4th degree	3	2.8
Total		108	100
Consanguinity Relationship Distribution Among Participants"	Paternal	15	13.9
	Maternal	93	86.1
Total		**108**	**100**

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It is alarming to know that in the present study, only 34% of the participants had knowledge about the consequences of consanguineous marriage.

Among the study participants, 18.5% gained knowledge regarding the consequences of consanguineous marriage from relatives followed by friends (6.5%), health professionals (6.5%), and 2.8% gained knowledge through mass media communications like television and radio.

The reasons for consanguinity, we found in our study, were due to cultural (80.6%) and religious factors (19.4%).

The distribution of consanguinity grades among participants shows that the majority of them have a 3^{rd}-degree (52.8%) relation followed by 2^{nd}-degree (44.4%) and 4^{th}-degree (2.8%) consanguinity. There are no participants under the 1^{st} degree of consanguineous marriage.

The distribution of consanguinity relationships indicates that 86.1% of relationships are maternal, while 13.9% are paternal side.

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Table 6: Distribution of Morbidity pattern and health problems among the respondents

PARAMETERS	Normal values	Variables	Frequency	Percent
Current health Problems among the Participants		Yes	6	5.6
		No	102	94.4
Total			**108**	**100**
Blood pressure index Among the participants	Systolic:<120-129mmhg Diastolic :80-84mmhg	Normal	103	.95.4
	Systolic:<120mmhg Diastolic :<80mmhg	Optimal	4	3.7
	Systolic :140-159mmhg Diastolic :90-99mmhg	Grade -1 hypertension	1	9
Total			**108**	**100**
Distribution of body mass index among the participants	18.5-24.99kg	Normal	59	54.6
	>25kg	Overweight	40	37.0
	<18.5kg	Underweight	9	8.3
Total			**108**	**100**
Distribution of anaemic index among the participant's	≥12gm/dl	Normal	40	37.0
	11-11.9gm/dl	Mild	49	45.4
	8-10.9gm/dl	Moderate	18	16.7
	<8gm/dl	Severe	1	0.9
Total			**108**	**100**

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In our study, we have observed that none of our participants were not suffering from any of the comorbid conditions such as diabetes, hypertension and cardiovascular diseases. It is very good to know only 6% had some other health problems, mainly they are related to gastrointestinal and reproductive.

In our study recording of the BP shows that 95.4% of participants had normal levels of blood pressure, with only 3.7% falling within the optimal range and 0.9% reported having grade -1 hypertension.

Anthropometric measurement shows that 54.6% were classified as normal weight, 37.0% as overweight, and 8.3% as underweight. Investigation of the haemoglobin level of study participants shows 37.0% exhibited normal levels, 45.4% had mild anemia,16.7% experienced moderate anemia, and 0.9% had reported severe anemia.

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Table 7: Distribution of respondent's knowledge on consequences of consanguineous marriage among the different age groups

Participants knowledge	Yes		No		Total
Participants age	**n**	**(%)**	**n**	**(%)**	**n**
≤ 18	0	0	1	1.4	1
19-23 years	5	13.5%	16	22.5%	21
24-29 years	12	32.4%	23	32.3%	35
30-34 years	6	16.2%	18	25.3%	24
35-39 years	9	24.3%	11	15.4%	20
40-45 years	5	13.5%	2	2.81%	7
Total	**37**	**100**	**71**	**100**	**108**

In our study we observed majority of the participants in the age group 24-29(32.4%) have more knowledge about consequences of consanguineous marriage followed by 35-39(24.3%). Overall, more than 24 years of age participants had knowledge about consanguineous marriage (85%).

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Table 8: Association of the respondent's knowledge of consequences of the consanguineous marriage with related to respondents' educational status.

Participants knowledge	Yes		No		Total	Chi-square	P value
Participants educational status	**N**	**(%)**	**n**	**(%)**	**n**		
High school	19	42.2%	26	57.8%	45	29.67	**.000***
Primary school	5	18.5%	22	81.5%	27		
PUC	1	7.7%	12	92.3%	13		
Graduate	10	83.3%	2	16.7%	12		
Uneducated	2	18.2%	9	81.8%	11		
Total	**37**	**34.2%**	**71**	**65.7%**	**108**		

The study highlights a significant association between participants' education status in relation to participant's knowledge on consequences of the consanguineous marriage, at p=0.05.

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Table 9: Association between Respondent's Knowledge on Consequences of Consanguineous Marriage with related to Spouse's Educational Status

Participants knowledge	Yes		No		Total	Chi-square	P value
Spouse Education	**n**	**(%)**	**n**	**(%)**	**n**		
High school	19	45.2%	23	54.8%	42	14.6	**.005***
Primary school	5	62.5%	3	37.5%	8		
PUC	1	6.7%	14	93.3%	15		
Graduate	4	16.0%	21	84.0%	25		
Uneducated	8	44.4%	10	55.6%	18		
Total	**37**	**34.2%**	**71**	**65.7%**	**108**		

Similarly, spouse education also shows a statistically significant relationship between participant's knowledge on consequences of the consanguineous marriage in relation to the spouse's educational status at $p = 0.005$

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Table 10: Association between the respondent's knowledge on consequences of consanguineous marriage in relation with related to respondent's occupation

Respondents' knowledge	Yes		No		Total	Chi-square	P value
Respondent's occupation	**n**	**(%)**	**n**	**(%)**	**N**		
Homemaker	37	35.6%	67	64.4%	104	2.165	**.0539***
Agriculture	0	0.00%	1	100%	1		
Services	0	0.00%	2	100%	2		
Labor	0	0.00%	1	100%	1		
Total	**37**	**34.2%**	**71**	**65.7%**	**108**		

The study highlights majority of our respondents were homemakers (35.6%). There is a significant association found between the participants occupation in relation to the participant's knowledge on consequences of the consanguineous marriage.

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Table 11: Association between respondent's knowledge on consequences of consanguineous marriage in relation with spouse's occupational status

Participants knowledge	**Yes**		**No**		**Total**	**Chi-square**	**P value**
Spouse occupation	**n**	**(%)**	**n**	**(%)**	**n**		
Labor	9	32.1%	19	67.9%	28		
Agriculture	21	45.7%	25	54.3%	46		
Services	0	0.00%	15	100%	15	11.92	**.018***
Daily wages	7	41.2%	10	58.8%	17		
Business	0	0.00%	2	100%	2		
Total	**37**	**34.2%**	**71**	**65.7**	**108**		

It is good to know that all the spouses were involved in one or other jobs. The present study highlights a significant association found between the participant's knowledge on consequences of the consanguineous marriage in relation with their spouse's occupation.

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Table 12: Association between the respondent's knowledge on consequences of consanguineous marriage in relation to the respondent's socioeconomic status

Respondent's knowledge	**Yes**		**No**		**Total**	**Chi-square**	**P value**
Respondent's socioeconomic status	**n**	**(%)**	**n**	**(%)**	**n**		
Upper	1	2.7%	5	7.0%	6	8.76	0.68
Upper middle	8	21.6%	13	18.3%	21		
Middle	7	18.9%	23	32.4%	30		
Lower middle	21	56.8%	24	33.8%	45		
Lower	0	0.00%	6	8.5%	6		
Total	**37**	**34.2%**	**71**	**65.7%**	**108**		

It is surprising to know that lower-middle-class participants have more knowledge regarding the consequences of consanguineous marriage (56.8%), followed by the upper-middle class (21.6%). There is no significant relationship between socioeconomic status and the participant's knowledge on the consequences of consanguineous marriage.

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Table 13: Association of the respondent's age with relation to the degree of consanguinity

Respondent's age	**<18**years		**19-23years**		**24-29years**		**30-34years**		**35-39years**		**40-45years**		**Total**	**Chi-square vaule**	**P value**
Degree of consanguinity	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	n		
2anddegree	0	0.	9	18.75	14	29.2	11	22.9%	12	25%	2	4.2%	48		
3rd degree	1	1.75	11	19.3%	20	35.1%	13	22.8%	7	12.3%	5	8.8%	57	5.868	0.826
4th degree	0	0%	1	0.9	1	33.3%	0	0%	1	33.3%	0	0%	3		
Total	**1**	**0.9%**	**21**	**19.4**	**35**	**32.4%**	**24**	**22.2%**	**20**	**18.5%**	**7**	**6.5%**	**108**		

Maximum number of the respondents (57.1%) had 3rd degree of consanguineous relationship (first cousin). Majority of them are in the age group of 24-29 age group. But there is no significant statistical association found between the age and degree of consanguinity

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Table 14: Association of the respondent's religion with relation to the degree of consanguinity

Participants religion	**Hindus**		**Muslim**		**Total**	**Chi-square value**	**P value**
Degree of consanguinity	**n**	**(%)**	**N**	**(%)**	n	1.126	0.569
2nd degree	43	89.6%	5	10.4%	48		
3rd degree	48	84.2%	9	15.8%	57		
4th degree	3	100%	0	0.00%	3		
Total	**94**	**87%**	**14**	**13%**	**108**		

Our study reveals that a significant proportion of Hindu participants, accounting for 89.6%, were married to their first cousins, contrasting with only 10% of Muslims who were in similar marital relationships. Furthermore, 84.2% of Hindus and 15.8% of Muslims were found to be married to their uncle or niece. Among our study participant only 3(100%) participants were reported to be married to their second cousins, with none of the Muslim participants having such marital relationships but there is no significant association found between the participant's religion and degree of consanguinity.

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Table 15: Association of the participant's education with relation to the degree of consanguinity

Participants education	High school		Primary school		PUC		Graduate		Uneducated		Total	Chi-square	P value
Degree of consanguinity	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**		
2nd degree	25	52.1%	12	25%	3	6.3%	5	10.4%	3	6.3%	48	8.7	.368
3rd degree	19	33.3%	14	24.6%	10	17.5%	6	10.5%	8	14%	57		
4th degree	1	33.3%	1	33.3%	0	0.00%	1	33.3%	0	0.00%	3		
Total	**45**	**0.9%**	**27**	**19.4%**	**13**	**32.4%**	**12**	**22.2%**	**11**	**18.5%**	**108**		

Findings of our study reflected that 18.5% of the participants are illiterate. But there is no significant statistical association found between the participants education and the degree of consanguinity.

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Table 16: Association of the participant's spouse education with relation to the degree of consanguinity

Spouse Education	**High school**		**Primary school**		**PUC**		**Graduate**		**Uneducated**		**Total**	**Chi square**	**P value**
Degree of consanguinity	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	n		
2nd degree	17	35%	4	8%	7	14.6	12	25%	8	17%	**48**	2.339	.969
3rd degree	23	40%	4	7%	8	14 %	12	21.%	10	18%	**57**		
4th degree	2	67%	0	0	0	0%	1	33%	0	0%	**3**		
Total	**42**	**38.9%**	**8**	**7.4%**	**15**	**13%**	**25**	**23%**	**18**	**16.7%**	**108**		

In the present study majority of them have completed their education as high school (38.9%) and 18% of them were illiterates. There is no significant statistical association found between the spouse education and the degree of consanguinity.

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Table 17: Association of the participant's occupation with relation to the degree of consanguinity

Participants occupation	**Homemaker**		**Agriculture**		**Labor**		**Services**		**Total**	**Chi square**	**P value**
Degree of consanguinity	**N**	**(%)**	**N**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	19.37	**0.04***
2nd degree	47	97.9%	1	2.1%	0	0.00%	0	0.00%	48		
3rd degree	55	96.5%	0	0.00%	1	1.8%	1	1.8%	57		
4th degree	2	66.7%	0	0.00%	0	0.00%	1	33.3%	3		
Total	**104**	**96.3%**	**1**	**0.9%**	**1**	**0.9%**	**2**	**1.9%**	**108**		

In our study we observed maximum number of the participants were homemakers among them majority of them were married to their first cousin. There is a significant association found between the degree of consanguinity and the participants occupation at p =0.04

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Table 18: Association of the participant's spouse occupation with relation to the degree of consanguinity

Spouse occupation	**Agriculture**		**Labour**		**Services**		**Daily wages**		**business**		**To Tal**	**Chi Square value**	**P valu e**
Degree of consanguinity	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
2nd degree	21	43.8%	16	33%	8	16.7%	3	16.3%	0	0.00%	48		
3rd degree	22	38.6%	12	21%	7	12.%	14	24.%	2	3.5%	57	13.48	0.96
4th degree	3	100	0	0.0%	0	0%	0.0	33.%	0.	0.00%	3		
Total	**46**	**43%**	**28**	**25%**	**15**	**13%**	**17**	**16%**	**2**	**2%**	**108**		

In our study we found the majority of the spouses were involved in agriculture by their occupation (43%). There is no significant statistical association found between the spouse occupation and the degree of consanguinity.

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Table 19: Association of the respondent's socioeconomic status with relation to the degree of consanguinity

Participants socioeconomic status	**Upper**		**Upper middle**		**Middle**		**Lower middle**		**Lower**		**Total**	**Chi square**	**P value**
Degree of consanguinity	**n**	**(%)**		**(%)**	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**			
2nd degree	3	6.3%	5	10.4%	10	20.8%	27	56.3%	3	6.3%	48	12.13	0.145
3rd degree	3	5.3%	16	28.1%	19	33.3%	16	28.1%	3	5.3%	57		
4th degree	0	0.0%	0	0%	1	33.3%	2	66.7%	0	0%	3		
Total	**6**	**5.6%**	**21**	**19.4%**	**30**	**28%**	**45**	**42%**	**6**	**5.6%**	**108**		

In our study majority of them belongs to lower middle socioeconomic class (42%), but there is no significant statistical association found between the participant's socioeconomic status and the degree of consanguinity.

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Table 20: Association of the respondent's religion with relation to the relationship of consanguinity

Relationship of consanguinity	**Maternal**		**Paternal**		**Total**		**Chi-square**	**P value**
Age of the participants	**n**	**(%)**	**n**	**(%)**	n	(%)	6.98	.228
<18 years	1	1%	0	0.00%	1	0.9		
19-23 years	19	20.4%	2	13.3%	21	19.4		
24-29 years	32	34.4%	3	20%	35	32.4		
30-34 years	21	22.5%	3	20%	24	22.2		
35-39 years	16	17.25%	4	26.6%	20	18.5		
40-45 years	4	4.3%	3	20%	7	6.4		
Total	**93**	**86.1%**	**15**	**13.9%**	**108**	**100**		

In our study we observed maximum number of the participants (86.1%) had maternal relationships; among them a majority were in the age group of 24-29(32.4%). There is no significant association found between the age of the participants and the relationship of the consanguinity.

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Table 21: Association of the participant's religion with relation to the relationship of consanguinity

Relationship of consanguinity	**Maternal**		**Paternal**		**Total**		**Chi-square**	**P value**
Participants religion	**n**	**(%)**	**n**	**(%)**	n	(%)	2.594	.107
Hindus	79	84.9%	15	100%	93	86.1		
Muslims	14	15.0%	0	0.00%	14	13		
Total	**93**	**100%**	**15**	**100%**	**108**	**100**		

In our study we observed Maximum number of the participants in our study have maternal relationship (86.1%) among them majority belongs to Hindu religion (86.1%). There is no significant statistical association found between the religion and the relationship of consanguinity.

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Table 22: Association of the respondent's number of children with relation to the duration of marriage among consanguineous married females

Duration of marriage	1-3 years		4-6 years		7-9 years		>10 years		Total		Chi Square	P Value
Number of children	n	(%)	n	(%)	N	(%)	n	(%)	N	(%)		
≤2	11	15.7%	10	14.35	12	17.1%	37	52.9%	70	83.3%	35.274	
3-4	1	3.3%	2	6.7%	4	13.3%	23	76.7%	30	27.7%		
NA	7	87.5%	1	12.5%	0	0.00%	0	0.00%	8	7.4%		
Total	**19**	**17.9**	**13**	**12%**	**16**	**14.8%**	**60**	**55.5%**	**108**	**100%**		

In our study we observed maximum number of our study participants had a married duration of more than 10 years (55.5%), among them majority of them have up to 2 children (83.3%). There is statistically significant association found between the duration of marriage and the number of children.

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Table 23: Association of respondent's religions with number of children

Participant religion	Hindu		Muslim		Total		Chi Square	P Value
Number of children	**n**	**(%)**	**n**	**(%)**	n	(%)		
≤2	65	92.8	5	7.14	70	64.8	7.09	**.029***
3-4	22	73.3%	8	26.6%	30	27.7		
NA	7	87.5%	1	12.5%	8	7.4		
Total	**94**	**87.03**	**14**	**12.96**	**108**	**100**		

In our study we observed that maximum number of our study participants were Hindus (87.3%), among them majority have less than two children (64.8%). There is a significant association found between the participant's religion and number of children.

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Table 24: Distribution of consanguineous marriage in different religions among the different family structures

Participants religion	Hindu		Muslim		Total		Chi Square	P Value
Type of family	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**		
Nuclear family	27	28.7	5	35.7	32	29.6	.525	.769
Joint family	12	12.7	1	7.14	13	12.0		
Three generation family	55	58.5	8	57.1	63	58.3		
Total	**94**	**100**	**14**	**100**	**108**	**100**		

94% of the participant's belongs to three generation family in the present study. But there is no association found between the participant's religion and the type of family.

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Table 25: Morbidity related to consanguineous marriage in both mother and child

PARAMETERS	Morbidity	No	Percent
Cause of pregnancy outcome	Stillbirth	1	5.26
	Repeated abortion	3	15.7
	Infant mortality	1	5.26
	Preterm labour	2	10.5
Total		**7**	**64.8%**
Cause of child outcome	abnormality in speaking	6	31.5
	mental retardation	3	15.7
	Milestone defect	1	5.26
	Handicapped	1	5.26
	Cerebral palsy	1	5.26
Total		12	11.1%

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Fig12: prevalence of outcomes among consanguineous married females

Poor outcome of pregnancy consanguineous marriage among

Total number of pregnancy outcomes

_____ X 100

Total number of consanguineous marriages

7/108= 6.48%

Poor outcome among the child borne due to consanguineous marriage

Total number of pregnancy outcomes

_____ X 100

Total number of consanguineous marriages

12/108x100= 11.1%

- In our study, we observed 6.4% of pregnancy outcomes (stillbirth, repeated abortion, preterm labor) Among the women who were consanguineously married
- whereas we observed 11.1% of the child outcome ((mental retardation, milestone defect, abnormality in speaking) as per record and medical history.

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DISCUSSION

Consanguineous marriage or marriage between blood relatives, has been a topic of significant interest and debate in the fields of genetics, anthropology, and public health. The practice is common in many cultures worldwide, particularly in the Middle East, South Asia, and parts of Africa. The study of consanguineous marriages encompasses various aspects, including genetic implications, sociocultural factors and public health considerations.

Prevalence

In our study we observed prevalence of consanguineous marriage as 2.76%. NFHS -4 data shows the prevalence of consanguineous marriage in Karnataka as 29.7%. There is a decreasing trend in consanguineous marriage we can observe here. This may be due to the increased literacy levels and occupational opportunities, which in turn provide greater awareness of events and developments both locally and globally. [13,55]

In our study, we observed the percentage of reproductive age group (15-49) years females as 50% NFHS-5 data shows it as 59%. [14]

Sociodemographic profile of the respondent's

Age

The present study highlights that the majority of participants are between 24-29 years old (32.4%), followed by those in the 30-34 age range (22.2%). Study conducted by Saed Anwar .*et.* al., observed in their study most of their respondents belonged to the younger cohort of females in less than 18 years (60%). This finding they observed in their study is contradictory to the findings we observed in our study.

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Another study conducted by Yagoob .*et.* al., in Saudi Arabia observed in their study most of the respondents were married at the age group of 20-24(58.2%). This finding they observed in their study matches with the findings we observed in our study. This age distribution is likely because many participants married at younger ages, often due to family arrangements within relatives such as the children of siblings or an uncle and niece marry each other. These practices are culturally ingrained within their families. The absence of participants aged 46-49 might suggest that older individuals were less willing to participate in the study.[56]

Religion

In our study we observed most of our respondents belonged to Hindu religion (87%). Ghoshshawstha.*et.* al., conducted a community-based cross-sectional study by encompassing the information from the fourth round of the national family health survey with a total of 493,927 participants. In their study, they observed Muslims are more compared to Hindus. This finding they observed in their study is contradictory to our findings that we observed in our study. Another study conducted by Shrikanth Kunthala observed that most of the respondents belonged to the Muslim (25%) religion. These findings observed in both the studies were contradictory to the findings we observed. This disparity might be due to our area was predominated by Hindus. [1,57]

Education

In our study, we observed among our study participants 10% were illiterates. Similarly, the educational status of spouses follows a similar trend, with 16.7% illiterates. There is a significant association between the respondent's knowledge of consanguineous marriage with respondent's education status. Among our study respondents 34.3% have knowledge of the consequences of consanguineous marriage.

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Harihar Saho .*et.* al., conducted a community based cross-sectional study on the basis of the national family health survey fourth round data shows in their study "Consanguineous marriages were predominant among the respondents have no education compared to the secondary and higher studies. Another descriptive-analytical study conducted by Malihe .*et*. al., in Iran and observed in their study there was a significant association found between the knowledge of the respondent's and their education. [57,58]

This shows that literacy plays an important role in reducing consanguineous marriage, and it also helps the individual to make apt decisions and also modulates their attitude and practice toward consanguineous marriage.

Occupational status

In our study we observed that 96.3% of the participants were homemakers. There is an association found between the participant occupation and knowledge of consequences. Similarly, there is a significant association found between the spouse's occupation and the knowledge of the consequence of consanguineous marriage. In our study, we observed most of the spouses were involved in agriculture (42.6%).64.4% of the respondents in our study did not have knowledge regarding the consequences of consanguineous marriage.

Nikhil joseph .*et.* al., conducted a cross-sectional study in Mangalore with 178 respondents observed in their study: most of their participants were housewives (63.1%), but there is no association found in their study [16]

This finding they observed in their study is similar to our study. This could be due to reason that homemakers often prioritize family stability, cultural tradition and economic security leads to higher priority for consanguineous marriage. With related to spouse, as our study area is in rural area the families involved in labour, daily wages and agriculture are more, and their potential marriage partners are limited and family prefer known and trusted individuals, this can lead to higher incidence of consanguineous marriage.

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Nazish Jahan Sajid Malik conducted a community-based cross-sectional study in the Bhimbri district of Jammu and Kashmir observed in his study that there was no significant association found between consanguineous marriage and the spouse occupation.in his study, spouses' occupations were divided into skilled and non-skilled; among this category, 63% were skilled; specifically, 63% of the husbands were working abroad in their studies.[22]

This finding he observed in his study is contradictory to our findings we observed in our study. This may be due to more exposure to outer environment and increased interactive section in workplaces help them to gather more information related to consanguineous marriage.

Type of family

There is a strong presence of extended family living arrangements, with a majority living in three-generation households (58.3%). Fariba. *et*.al., conducted a study in Iran observed in their study that 89.7% of their participants were living with their parents.[59]

This finding they observed in their study matches with our findings we observed in our study. This could be due to cultural and religious factors that run in the family.

Socioeconomic status

In our study, the majority of our participants belong to the lower-middle class (41.7%). There is more level of knowledge on consequences of consanguineous marriage among lower middle socioeconomic status (41.7%). Beenish Abbas .*et.* al., conducted a cross-sectional analytical study in Pakistan with 254 respondents observed in their study, "Most of the participants in their study belong to lower socioeconomic status" (74%).[60]

Asifa Kamal .*et.* al., conducted a cross-sectional study in Pakistan and observed in their study most of the consanguineous marriages are happening in lower socioeconomic status, similarly another study conducted by the Bittle et al also observed same findings in their study. [20,7]

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These all-study's findings are matching with the findings we observed in our study. The reason could be that there is no need to pay dowry if it is within the family, may be due to holding their ancestral properties without going to outside. [19]

Duration of marriage

In our study we observed most of our respondents have a married life of >10 years (55%). The majority of them married at the age of 18-20 years (57.4%) and had their first child by the age of 20. This aligns with the trend of early marriages. There is a clear inclination towards smaller family sizes, with most families having up to 2 children. However, a significant number of participants still prefers more children with preference of male child.

Venkataraman .*et.* al., conducted a community based cross-sectional study in Maharashtra observed in their study most of their respondents in consanguineous marriage less than 5(22.1%) years of married life. This finding they observed in their study is contradictory to the findings we observed in our study.[61]

Anirudh K. Menon. *et.* al., conducted a study in Shimoga and observed that the majority of the participants married at the age of 18(50%), and the majority of them had their first child before 19 years (78%).[62]

The findings they observed in their study matches with the findings of our study. This could be due to the reason that in consanguineous marriage once the girl attained menarche, they plan for her marriage this tends to leads to early marriage and early pregnancy.

Family planning methods

In our study, we observed all of our study participants have knowledge regarding family planning methods; among them, 31% have adopted various family planning methods. Majority of them adopted tubectomy (25.9%) whereas barrier methods such as condom were adopted by 2.8%. Sarosh Iqbal conducted a cross-sectional study in Pakistan observed in their study among their respondents. 63.9%

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of them are not using contraceptive methods.[18] This finding they observed in their study is similar to our study.

Another study done in Karnataka Vijayapura also shows there is increased knowledge (87%) but they have not adopted any contraceptive methods (93%) this finding they observed in both studies are similar to the findings we observed in our study this may be due to traditional or cultural factors. This might be the reason that majority of the respondents were having up to 2 children and they have not attained their desired family size.[63]

Degree of consanguinity

In our study, we observed most of the respondents who belonged to the Hindu religion had a degree (44.4%) and 3(52.8%) consanguinity. This may be due to religious and geographical factors of the study population. Bhagya Baskar *.et.* al., conducted a community-based cross-sectional study in Mangalore. In their study, they observed most of their respondents belonged to the Hindu religion (35.82) and 32%were Muslims, and 32% belonged to Christians. Among them, 13.56% of the respondents who belong to the Muslim religion married consanguineously and more than 40% of respondents were married to their first cousin.[64]

This finding they observed in their study matches with findings we observed in our study, religious variation in our study is due to our study area was predominated by Hindus.

Relationship of consanguinity

In our study, we observed among our respondents that the participants belong to the Hindu religion and have a maternal relationship (86.1%). Saros Iqbal *.et.* al. conducted a study in Pakistan, shows that in their study, most of their respondents (67%) have maternal relationships.[18]

The reason behind may be age between the girl and boy which matches with their age of marriage and also the relation between the families

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Impact of consanguineous marriage

Overall, we found 17% of them had either related to pregnancy or child outcome due to consanguinity. Nikhil Joseph1 *et* al. conducted a study in Mangalore that observed the pregnancy outcome as abortions (4.3%), stillbirths (4.3%), low birth weight (3.3%), and congenital anomaly (39.1%) in their study.[16] This shows that consanguineous marriage is one of the reasons for such type of outcomes.

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SUMMARY

- The present study was a cross-sectional analysis conducted in Unnat Bharath Abhiyan enrolled villages (Ukkali, Donnur, Hegadihal, Deginal, Yambatnal) among ever-married women in the reproductive age group (15-49 years). After screening, a total of 108 respondents with a history of consanguineous marriage were enrolled in the study.

Key findings include

- A majority (32.4%) of participants were in the age group of 24-29 years.
- Most participants (87%) were Hindu.
- Illiteracy rates were 10.2% among participants and 16.7% among their spouses.
- A significant number of participants (96.3%) were homemakers, while 42.6% of their spouses were involved in agriculture.
- 58.3% of participants lived in a three-generation family, and 41.7% belonged to lower-middle socioeconomic status.
- Among the respondents, 3.7% were widowed, and 0.9% were living separated from their husbands.
- Most respondents had been married for over 10 years, with a majority (57.4%) marrying at the age of 18-20 years.
- 63% had their first child before the age of 20, and 64.8% had up to 2 children.
- All participants had knowledge of family planning methods, with 31% having adopted one; 25.9% of these opted for tubectomy.
- A majority (65.7%) had no knowledge regarding the consequences of consanguineous marriage, with relatives being the primary source of information (18.5%).
- Cultural factors were the predominant reason for consanguinity (80.6%), followed by religious factors (19.4%).

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- Consanguinity was most commonly observed at the 3rd degree (52.8%), followed by the 2nd degree (44.4%).
- Maternal consanguinity was more prevalent (86.1%).
- None of the participants had comorbid conditions like diabetes, hypertension, or cardiovascular diseases.
- 6% reported gastrointestinal and reproductive health problems, with physical examination revealing 0.9% had grade-1 hypertension, 37% were overweight (BMI >25), and 8.3% were underweight (BMI <18).
- Hemoglobin levels showed 45.4% had mild anemia, 16.7% had moderate anemia, and 0.9% had severe anemia.

Statistical associations found in the study include

- A significant association between the knowledge of the consequences of consanguineous marriage and the educational status of the participant p=0.00
- A significant association between the spouse's education and knowledge of the consequences of consanguineous marriage p=0.005
- A significant association between the participant’s occupation and their knowledge of the consequences of consanguineous marriage p=0.05
- A significant association between the spouse's occupation and knowledge of the consequences of consanguineous marriage p=0.018
- A significant association between the participant’s occupation and the degree of consanguinity p=0.04
- A significant association between the number of children and the duration of marriage p=0.00
- A significant association between the participant’s religion and the number of children.p=0.029

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CONCLUSION

The present study was a community-based cross-sectional study conducted in rural areas, wherein multiple factors like education, socioeconomic status and cultural practices play a critical role related to consanguineous marriage. From our study, we conclude that overall, there is a decrease in consanguineous marriages compared to the previously available data. Literacy levels were inversely related to the prevalence of consanguineous marriages, suggesting that education may play a pivotal role in reducing these practices. Education makes individuals capable to take appropriate decisions and also provides good knowledge, attitude and practice among the community.

Consanguineous marriage is more followed among Hindu and Muslim religions and also in lower socioeconomic status due to long-standing cultural beliefs, religious factors and also due to perceived benefits of keeping wealth within the family, and their trust and cooperation. It facilitates the smoother management of shared responsibility and resources.

Since there is no proper knowledge about the consequences of consanguineous marriage these types of marriages are repeatedly happening. Even the education status is very poor, indicating the first barrier to providing awareness for the community regarding the consequences of consanguineous marriage.

It is noteworthy that during our study period, we educated and counselled the respondents and their family members regarding the consequences of consanguineous marriage. prevent morbidity related to consanguinity in the future. Overall, it shows that consanguineous marriage requires a multifactorial approach that incorporates educational, economic and cultural factors.

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RECOMMENDATION:

- Develop and support education programs that raise awareness related to the consequences of consanguineous marriage.
- Implement policies that promote literacy and provide vocational-level training to empower the individual to make informed marital choices.
- Genetic counseling should be organized in the primary health care centers and wellness centers to help them to understand the risks.
- Foster community engagements that respect cultural tradition with respect to critical discussion about the outcome of it.
- Government and health organizations can raise public awareness about the consequences of consanguineous marriages through various media platforms such as TV, radio, and social media.
- More research could benefit from including larger and more diverse samples. This would help to ensure that the findings are more representative of the broader population and not limited to a specific geographical area.

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LIMITATION

- The current research is limited by the geographical scope of the sample; therefore, our findings cannot be generalized.
- Participants from other religions are not found in our study area. The study contains Hindu and Muslim religions.
- The consequence of consanguinity was not studied in detail as our study was cross-sectional, so it needs longitudinal design in the future to allow researchers to track changes over time, providing a better understanding of the development and progression of the phenomena being studied.

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ANNEXURE-I

QUESTIONNAIRE

Date

Prevalence and sociodemographic correlates of consanguineous marriages in the rural population of Vijayapura district

PROFORMA

Household no:

a) The number of married women in the reproductive age group: yes /no

b) If yes, how many:

c) H/O Of Consanguineous Marriage -Yes /No

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1. Name :	
2. Age :	
3. Religion:	Hindu/Muslim/Christian/Others/specify
4. Educational Status:	SSLC/PUC/Graduate/Postgraduate
5. Occupation:	homemakers/Services/Labor/Business/Agriculture/Others
6. Husband's Educational status:	SSLC/PUC/Graduate/Postgraduate
7. Husband's Occupation	services/Labor /Business/Agriculture/others/daily wages
8. Number Of Family Members:	……
9. Relation to women:	Mother/sister/brother /Son/husband /father-in-law /mother-in-law/others
10. Knowledge regarding family planning methods:	Yes / No

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11. If yes which methods	.....
12. Have you adopted any Family planning method	Yes / No
13. If yes specify	----------
14. Income per month:	----------
15. Per capita income	----------
16. Socio-economic Status:	Upper/Upper middle/Lower Middle/Upper lower/Lower
17. Duration of marriage:	----------
18. Age at marriage:	----------
19. Age at first delivery:	----------
20. Number of children:	----------

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21. Age of the children	----------
22. Are you aware of the consequence of consanguineous marriage	YES/NO
23. If yes, how:	newspaper/radio/TV/internet/relatives/friends/health professionals/others
25. Reason for consanguinity:	open-ended responses…… /cultural/no dowry /poverty/ economical/religious/any others
26. Grade of consanguinity:	First /Second/Third/ fourth degree a) 1st degree – marriage between sibling b) 2nd degree – marriage between uncle and niece c) 3rd degree -marriage between first cousins d) 4th degree - marriage between the second cousins or between people with relationships beyond second cousins or a far-off relationship, all fall under the category

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27. Relationship of consanguinity:	Paternal/Maternal
28 Any abnormalities in the children:	YES/NO
29 If yes specify: ----------,	open-ended (with available medical record, handicapped, bleeding disorder, delayed milestone) any other
30 What is the age of the child:	……
31 Sex of the child:	……..
32. Do you have any issues related to pregnancy(past/present)	YES/NO open-ended responses (h/o repeated abortion, IUGR, Stillbirth) medical records

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33. If yes specify	……
33. Any habits----(smoking, tobacco chewing)	……..
34. Any h/o Diabetes/HTN/CAD/ any other	…….
35. Presently any health problems:	Respiratory, GIT, Reproductive tract infection, any other If others specify----------
36. BP	……
HEIGHT	……..
WEIGHT	……..
BMI	……..
Pallor	……
Haemoglobin	……

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ANNEXURE-II

ETHICAL CLEARANCE

Azadi Ka Amrit Mahotsav

BLDE
(DEEMED TO BE UNIVERSITY)
Declared as Deemed to be University u/s 3 of UGC Act, 1956
Accredited with 'A' Grade by NAAC (Cycle-2)
The Constituent College
SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE, VIJAYAPURA

BLDE (DU)/IEC/ 693/2022-23

30/8/2022

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this University met on **Friday, 26th August, 2022 at 3.30 p.m. in the Department of Pharmacology** scrutinizes the Synopsis of Post Graduate Student of BLDE (DU)'s Shri B.M.Patil Medical College Hospital & Research Centre from ethical clearance point of view. After scrutiny, the following original/ corrected and revised version synopsis of the thesis/ research projects has been accorded ethical clearance.

TITLE: "PREVALENCE AND SOCIO-DEMOGRAPHIC CORELATES OF CONSANGUINEOUS MARRIAGES IN RURAL POPULATION OF VIJAYAPURA DISTRICT".

NAME OF THE STUDENT/PRINCIPAL INVESTIGATOR: DR ARUN P SASI

NAME OF THE GUIDE: Dr. Rekha S. Udgiri, Professor, Dept. of Community Medicine

Dr. Santoshkumar Jeevangi
Chairperson
IEC, BLDE (DU),
VIJAYAPURA

Chairman,
Institutional Ethical Committee,
BLDE (Deemed to be University)
Vijayapura

Dr.Akram A. Naikwadi
Member Secretary
IEC, BLDE (DU),
VIJAYAPURA

MEMBER SECRETARY
Institutional Ethics Committee
BLDE (Deemed to be University)
Vijayapura-586103. Karnataka

Following documents were placed before Ethical Committee for Scrutinization.

- Copy of Synopsis/Research Projects
- Copy of inform consent form
- Any other relevant document

Smt. Bangaramma Sajjan Campus, B. M. Patil Road (Sholapur Road), Vijayapura - 586103, Karnataka, India.
BLDE (DU): Phone: +918352-262770, Fax: +918352-263303, Website: www.bldedu.ac.in, E-mail:office@bldedu.ac.in
College: Phone: +918352-262770, Fax: +918352-263019, E-mail: bmpmc.principal@bldedu.ac.in

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ANNEXURE-III

PARTICIPANT INFORMATION SHEET

PURPOSE OF RESEARCH:

I have been informed that this study will help to know the prevalence of Consanguinity, create awareness regarding its impact on children, and give health education. I have explained the reason for doing this study and selecting me as a subject for this study. I have also been given the free choice of either being included or not in the study.

PROCEDURE:

I understand that this is a field-base study. In this procedure, I will be asked a series of questions by the researcher regarding the topic

RISKS AND DISCOMFORTS:

I understand that I may experience pain and discomfort during the examination or any intervention. This is mainly the result of my condition, and the procedure of this study is not expected to exaggerate these feelings, which are associated with the usual course of diagnosis and treatment

BENEFITS:

I understand that my participation participation in this study will help to create awareness regarding the Consanguinity

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CONFIDENTIALITY:

I understand that medical information produced by this study will becomea part of this hospital records and will be subjected to the confidentiality and privacy regulation of this hospital. Information of a sensitive, personal nature will not be a part of the medical records, but will be stored in the investigator's research file and identified only by a code number. The code key connecting name to numbers will be kept in a separate secure location.

If the data are used for publication in the medical literature or for teaching purpose, no names will be used and other identifiers such as photographs and audio or video tapes will be used only with my special written permission. I understand that I may see the photograph and videotapes and hear audiotapes before giving this permission.

REQUEST FOR MORE INFORMATION:

I understand that I may ask more questions about the study at any time.

Dr. Arun p sasi is available to answer my questions or concerns. I understand that I will be informed of any significant new findings discovered during the course ofthis study, which might influence my continued participation.

If during this study, or later, I wish to discuss my participation in or concerns regarding this study with a person not directly involved, I am aware that

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the social worker of the hospital is available to talk with me. And that a copy of this consent form will be given to me to keep it andfor careful reading.

REFUSAL OR WITHDRAWAL OF PARTICIPATION:

I understand that my participation is voluntary and I may refuse to participate or may withdraw consent and discontinue participation in the studyat any time without prejudice to my present or future care at this hospital.

I also understand that Dr. Arun P Sasi will terminate my participation in this study at any time after he has explained the reasons for doing so and has helped arrange for my continued care by my own physician or therapist, if this is appropriate.

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INJURY STATEMENT:

I understand that in the unlikely event of injury to me/my ward, resulting directly to my participation in this study, if such injury were reported promptly, then medical treatment would be available to me, but no further compensation will be provided.

I understand that by my agreement to participate in this study, I am not waiving any of my legal rights.

I have explained to

the purpose of this research, the procedures required and the possible risks andbenefits, to the best of my ability in patient's own language.

Date:

(Guide) (Investigator)

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ANNEXURE-IV

INFORMED CONSENT FORM FOR HHCs

I confirm that Dr. Arun p sasi has explained the research's purpose, the study procedure, and the possible discomfort and benefits that I may experience during the study. Dr. Arun p sasi has explained all the above in detail in my own language and I have understood the same. Therefore, I agree to give consent for my participation as a subject in this research project.

Date:

_____

(Name of Study Participant)

_____

(Signature of Study Participant)

CONSENT STATEMENT FROM PARENTS / LOCAL GUARDIAN:

I confirm that Dr. Arun p sasi has explained the research's purpose, the study procedure that my son/daughter will undergo & the possible discomfort and benefits that he/she may experience in my own language. I have been explained all the above in detail in my language and understand the same. Therefore, I agree to give consent for my ward's participation as a subject in this research project.

_____

(Signature of the Parent / Guardian) Date:

_____

(Signature of witness)

ASSENT FORM

I have been asked to participate in a study on the topic "Prevalence &sociodemographic correlates of consanguineous marriage in the rural population of Vijayapura District done by Dr. Arun p sasi under the guidance of Dr Rekha udgiri. By participating in this research, I will be asked a series of questions by the researcher regarding the topic. I have understood that the information about me will be kept secret, and I have the right to ask questions about my information and the result of the study. I have been informed that I will be able to leave the research at any time I want without any prejudice. I agree to be a part of this research.

Participants full Name:

Date

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ANNEXURE-V

PLAGIARISM REPORT

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Similarity Report ID: oid:3618:61923369

PAPER NAME

21BMCOM02-Prevalence &sociodemographic correlates of consanguineous marriage in the rural population

AUTHOR

ARUN P SASI

WORD COUNT

13960 Words

CHARACTER COUNT

81703 Characters

PAGE COUNT

99 Pages

FILE SIZE

982.3KB

SUBMISSION DATE

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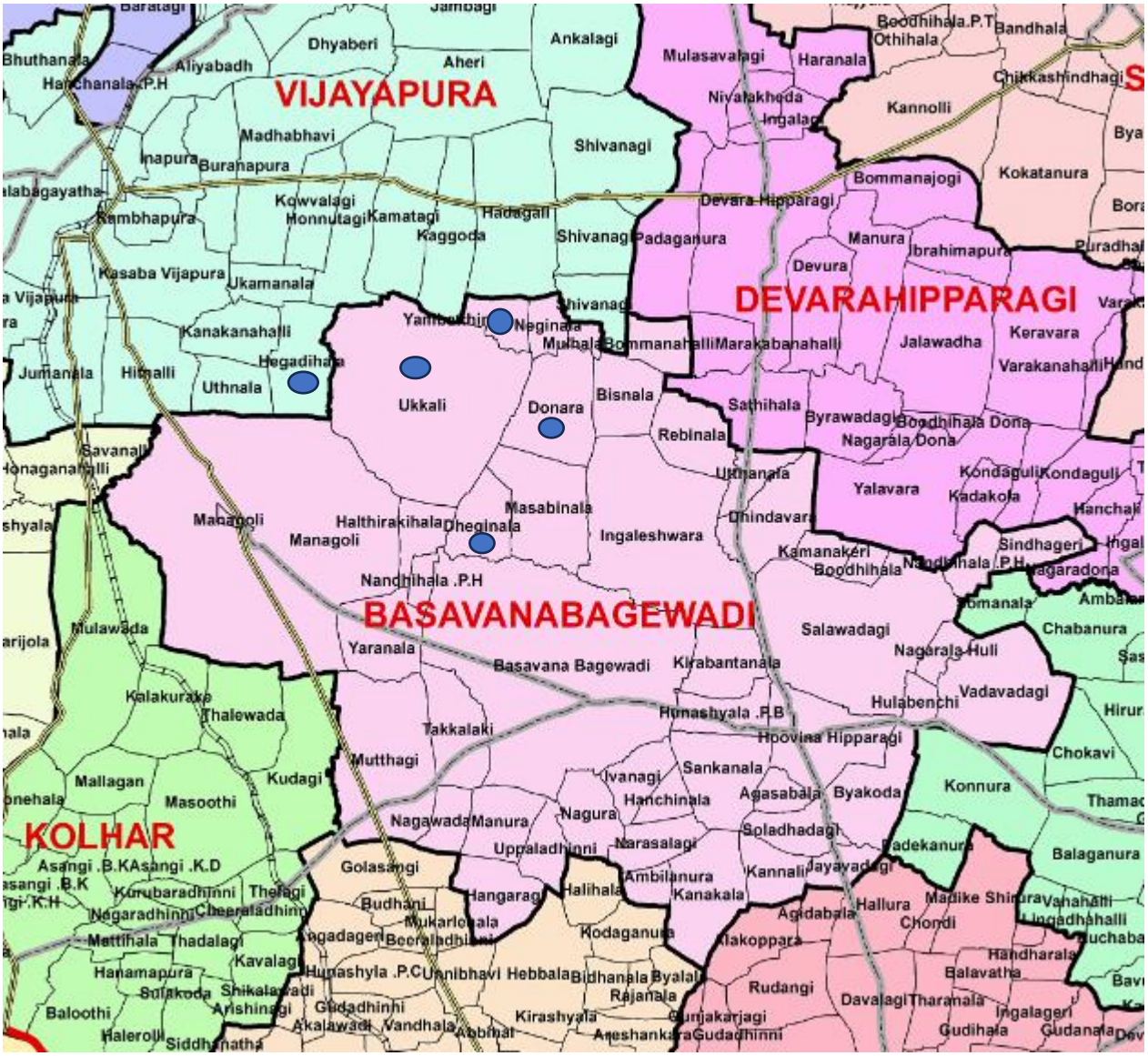
ANNEXURE-VI

AREA MAP OF BIJAPUR DISTRICT (BASVANA BAGAWADI THALUK)



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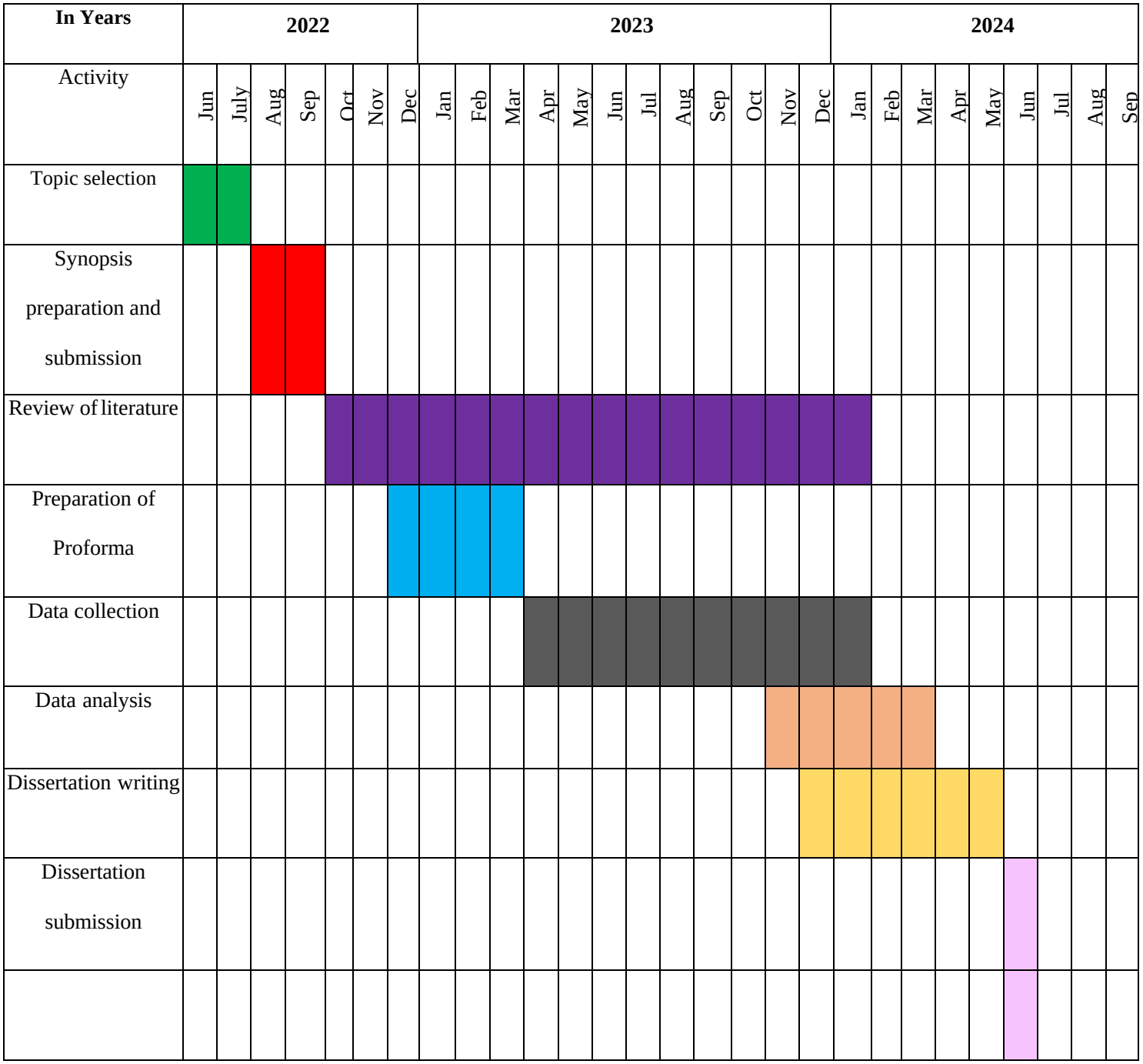
ANNEXURE-VII

Gantt Chart



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ANNEXURE-VIII

PHOTOGRAPHS

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