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Regional disparities and sociodemographic determinants of intention to use contraceptives among Somali women: a cross-sectional analysis of the 2020 SDHS

Jamilu Sani[1] and Mohamed Mustaf Ahmed[2*]

Abstract

Background Contraceptive use is vital to improve maternal and child health, promote economic stability, and empower women. Despite global progress in family planning, Somalia faces unique challenges due to cultural, economic, and infrastructural barriers, resulting in low contraceptive use. This study investigated the prevalence and determinants of the intention to use contraceptives among women of reproductive age in Somali.

Methods Using data from the 2020 Somali Demographic and Health Survey (SDHS), this study analyzed a sample of 7,967 women aged 15–49. Contraceptive intention was categorized as "intent to use" versus "no intent to use." The SDHS questionnaire assesses intention to use contraceptives in the next 12 months, which aligns with standard DHS definitions. Bivariate and multivariable logistic regression analyses were conducted to assess the association between contraceptive intention and sociodemographic factors. Choropleth maps and bar charts illustrate regional disparities.

Results Overall, only 7.6% of the women intended to use contraception, with substantial regional variation. Woqooyi Galbeed reported the highest prevalence of contraceptive intention at 18.4%, while Gedo had the lowest at 1.1%. Significant predictors of contraceptive intention included higher education (AOR: 2.34, 95% CI: 1.21–4.56), secondary education (AOR: 1.91, 95% CI: 1.12–3.26). Women residing in nomadic communities had significantly lower odds of intending to use contraception (AOR: 0.40, 95% CI: 0.23–0.68). Since nomadic residence often implies reduced healthcare access, this finding suggests logistical and cultural barriers to contraceptive intentions. Cultural and geographic factors significantly influence contraceptive intentions.

Conclusion Regional, educational, and socioeconomic variations affect contraceptive intentions in Somalia. Addressing these disparities through targeted educational and healthcare access interventions could improve family planning and utilization, ultimately enhancing maternal and child health outcomes.

Keywords Maternal health, Somalia, Regional disparities, SDHS, Intention to use contraceptives, Reproductive age women

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Introduction

Contraceptive use is a critical component of reproductive health and family planning, significantly contributing to reduced maternal and infant mortality, improved economic stability, and enhanced gender equality [1]. Intention to use contraceptives refers to an individual's stated likelihood of adopting contraception in the future [2, 3]. This measure is widely used in family planning research to assess potential demand for contraception. Beyond individual health benefits, contraceptive use has far-reaching societal implications by decreasing unintended pregnancies, which often leads to increased healthcare costs and socioeconomic burdens [4, 5]. Despite global initiatives aimed at improving contraceptive accessibility, substantial disparities remain, particularly in low- and middle-income countries, where cultural, economic, and infrastructural barriers hinder access to family planning services [6–8].

Somalia presents unique challenges in reproductive health owing to prolonged conflict, limited healthcare infrastructure, and distinct cultural contexts. Consequently, contraceptive use in Somalia is notably lower than in many other sub-Saharan African countries, contributing to one of the highest fertility rates globally at 6.9 births per woman [9, 10]. Globally, the intention to use contraceptives among fecund sexually active women is around 42.8% [2, 3], but in Somalia, only 7% of currently married women use any contraceptive method, with just 1% using modern methods [11, 12]. This disparity highlights a significant gap in contraceptive use in Somalia compared to global averages, underscoring the need for improved access to family planning services. A significant portion of Somalia's population is rural and nomadic, with many women lacking access to healthcare services, particularly in remote areas [13]. High fertility rates are further exacerbated by cultural norms that favor large families, limited education regarding family planning options, and restricted access to healthcare facilities [14, 15]. This low prevalence of contraceptive use poses substantial challenges for maternal and child health as inadequate birth spacing and unintended pregnancies contribute to elevated maternal and neonatal mortality rates [16].

Research indicates that various factors influence contraceptive use and intentions among women, including sociodemographic characteristics, such as age, education level, and marital status. Specifically, education plays a pivotal role in contraceptive uptake; women with higher education levels tend to have a better understanding of reproductive health issues, empowering them to make informed family planning decisions [15, 17]. Economic factors also significantly affect contraceptive use: financially stable women are more likely to access health services and afford contraceptive methods [7, 18]. In Somalia, where poverty levels are high, economic constraints frequently limit women's ability to prioritize contraception. Geographic location further influences contraceptive access. Urban residents typically enjoy greater access to healthcare services and contraceptive options compared to their rural or nomadic counterparts who face logistical barriers and have fewer nearby healthcare facilities [9, 19, 20].

Additionally, cultural and religious beliefs significantly shape family planning intentions in Somalia; some communities perceive contraceptive use to be inconsistent with traditional norms [9, 21]. This cultural context presents unique challenges for reproductive health initiatives aimed at improving contraceptive use in the country. This study aimed to assess the factors influencing Somali women's stated intention to use contraceptives rather than actual usage patterns, while examining how sociodemographic factors contribute to disparities in these intentions across different regions. Utilizing data from the 2020 Somali Demographic and Health Survey (SDHS), this study provides a comprehensive analysis of the determinants of contraceptive intentions, focusing on factors such as education level, working status, wealth status, residence, and geographic region. Understanding these determinants is crucial for developing culturally sensitive and region-specific interventions to address the unique needs of Somali women. This study contributes to the broader literature on reproductive health in conflict-affected settings by offering insights that could inform policy actions aimed at increasing contraceptive access and improving maternal health outcomes in Somalia.

Methods

Study design and data source

This analysis employed a cross-sectional design, utilizing data from the 2020 Somali Demographic and Health Survey (SDHS). The SDHS is a nationally representative survey that gathers extensive health and demographic data from women of reproductive age, specifically those aged 15–49 years. For our analysis, we utilized the Individual Recode (IR) dataset, which emphasizes reproductive health indicators, including contraceptive usage and intentions.

Study population and sampling methods

The study population consisted of women aged 15–49 years who participated in the 2020 Somali Demographic and Health Survey (SDHS) and provided information on their contraceptive use intentions. The final analytical sample included 7,967 women. The SDHS employed a two-stage, stratified cluster sampling design to ensure national representativeness. In the first stage, enumeration areas (EAs) were selected from a national master sampling frame using probability proportional to size

(PPS) sampling, ensuring that larger EAs had a higher probability of selection. In the second stage, households within each selected EA were randomly selected using systematic random sampling. To avoid intra-household clustering bias and maintain statistical independence, if multiple eligible women (aged 15–49) resided in the same household, one woman was randomly selected for the interview.

Data collection

Data were collected through face-to-face structured interviews, administered by trained enumerators using standardized DHS questionnaires. The interviews covered key demographic and health-related factors, including contraceptive awareness, reproductive health behaviors, and fertility preferences. Information on contraceptive intention was specifically obtained by asking women whether they intended to use contraception in the next 12 months. The survey followed strict quality control procedures, including field supervision and real-time data validation, to ensure the accuracy and consistency of responses.

Study variables

The outcome variable for this study was the intention to use contraception, which was initially classified into four categories: users of modern methods, users of traditional methods, non-users intending to use contraception in the future (within next 12-months), and non-users not intending to use it. For the purpose of this analysis, we retained only the two categories related to intention, resulting in a binary classification: individuals intending to use contraception in the future were coded as "1," while those not intending to use it were coded as "0." Importantly, women currently using any form of contraception were excluded from this analysis.

The independent variables included various sociodemographic factors, such as age group (categorized into seven 5-year intervals from 15–19 to 45–49 years), education level (no education, primary, secondary, or higher), marital status (married, widowed, divorced, or never married), and wealth index. The wealth index, a proxy for socioeconomic status, was derived using principal component analysis (PCA). PCA was performed on a set of variables reflecting household asset ownership (e.g., radio, television, livestock), housing characteristics (e.g., flooring material, toilet facilities), and access to basic services (e.g., water source, electricity). The resulting continuous wealth index was then categorized into quintiles (poorest, poorer, middle, richer, richest). Other independent variables included employment status (employed or unemployed), perceived distance to a health facility (categorized as 'big problem' or 'not a big problem,' reflecting individual perceptions of accessibility), residence (urban, rural, or nomadic), and region. All independent variables were treated as categorical variables, as described above, to effectively assess their impact on the intention to use contraception.

Statistical analysis

Data analysis was performed using Stata version 17. DHS sampling weights were applied throughout the analysis to account for the complex survey design and ensure national representativeness. Descriptive statistics were used to summarize the sociodemographic characteristics of the study population and the overall prevalence of contraceptive intention, which was visualized using a pie chart. Regional disparities in contraceptive intention were displayed using a bar chart, and a choropleth map was generated using GeoPandas in Python with GADM map data for Somalia to provide a clear geographical representation.

Bivariate and multivariable binary logistic regression analyses were conducted to examine the associations between various sociodemographic factors and the intention to use contraceptives. Crude odds ratios (CORs), adjusted odds ratios (AORs), and 95% confidence intervals (CIs) were calculated to quantify the strength of these associations. All statistical tests were two-sided, and the significance level was set at $p < 0.05$.

While acknowledging that variables such as residence and wealth status have both individual and community-level components, and that multilevel modeling could offer insights into hierarchical influences, this study focused primarily on individual-level predictors of contraceptive intention. Therefore, a single-level logistic regression model was deemed appropriate for addressing the research objectives. Future research may explore multilevel modeling to further investigate contextual influences on contraceptive intention.

Results

Sociodemographic characteristics

The study included 7,967 women aged 15–49 years, with the highest representation in the 25–29 age group (23.31%), followed by the 20–24 age group (17.54%). Women aged 45–49 comprised the smallest proportion (6.44%) (Table 1). Education levels were predominantly low; 84.01% of the participants reported no formal education, while only 1.22% had higher education. The marital status distribution showed that most respondents were married (86.78%), 8.99% divorced, and 4.23% widowed. Regarding wealth, the lowest and second quintiles represented 23.17% and 19.39% of the participants, respectively, while the highest quintile accounted for 17.91%.

Access to healthcare was a notable concern, with 62.36% of women reporting that distance to health facilities was a "big problem." Employment levels were

Table 1 Sociodemographic characteristics (*N* = 7,967)

Variable	Category	Weighted Frequency	Percent
Age Group	15–19	590	7.42%
	20–24	1,395	17.54%
	25–29	1,854	23.31%
	30–34	1,428	17.95%
	35–39	1,354	17.02%
	40–44	820	10.31%
	45–49	512	6.44%
Education	No Education	6,693	84.01%
	Primary	941	11.81%
	Secondary	235	2.95%
	Higher	98	1.22%
Marital Status	Married	6,914	86.78%
	Divorced	716	8.99%
	Widowed	337	4.23%
Wealth Quintile	Lowest	1,846	23.17%
	Second	1,545	19.39%
	Middle	1,499	18.82%
	Fourth	1,650	20.72%
	Highest	1,427	17.91%
Distance to Health Facility	Big problem	4,967	62.36%
	Not a big problem	2,997	37.64%
Work Status	Working	663	8.33%
	Not working	7,301	91.67%
Residence	Rural	1,993	25.01%
	Urban	4,943	62.04%
	Nomadic	1,031	12.94%
Region	Awdal	778	9.76%
	Woqooyi Galbeed	574	7.21%
	Togdheer	290	3.64%
	Sool	606	7.60%
	Sanaag	854	10.72%
	Bari	506	6.35%
	Nugaal	849	10.66%
	Mudug	890	11.18%
	Galgaduud	863	10.83%
	Hiraan	440	5.53%
	Middle Shabelle	284	3.56%
	Banadir	445	5.59%
	Bay	67	0.85%
	Bakool	302	3.79%
	Gedo	101	1.26%
	Lower Juba	117	1.47%

low, as 91.67% of women did not work. Regarding residence type, 62.04% lived in urban areas, 25.01% lived in rural areas, and 12.94% lived in nomadic communities. Regional distribution varied widely, with the Mudug, Sanaag, and Galgaduud regions having the highest representation, at 11.18%, 10.72%, and 10.83%, respectively.

Prevalence and disparities in contraceptive use intention in Somalia

The overall prevalence of contraceptive intentions among women in Somalia was notably low (Fig. 1). Significant regional disparities were observed (Fig. 2), with Woqooyi Galbeed exhibiting the highest prevalence of contraceptive intention (18.4%) and Gedo the lowest (1.1%). The choropleth map in Fig. 2 visually represents the geographic distribution of contraceptive intention across Somalia, emphasizing the substantial regional variation.

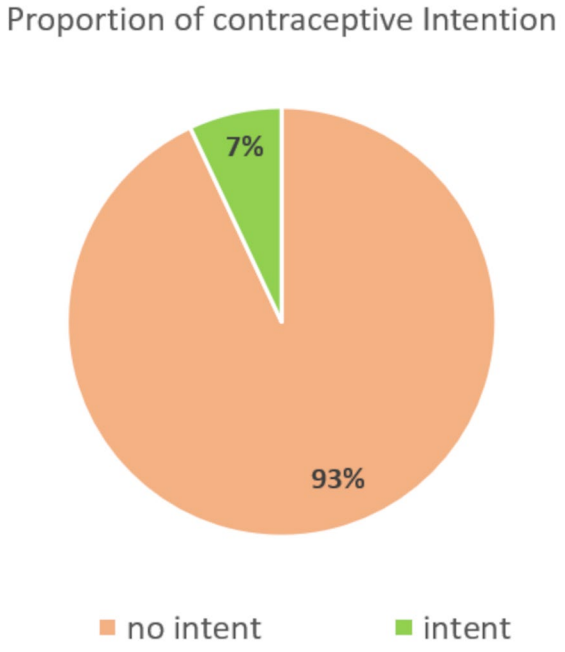

Fig. 1 Prevalence of contraceptive intention

Bivariate analysis of sociodemographic factors associated with contraceptive use intention

The bivariate analysis (Table 2) identified significant associations between contraceptive use intention and several sociodemographic variables. Women aged 40–44 showed significantly lower intention to use contraception compared to those aged 15–19 (OR: 0.48, 95% CI: 0.25–0.92, $p = 0.028$). Education was a strong predictor: women with secondary education were more likely to intend to use contraceptives than those with no education (OR: 2.42, 95% CI: 1.49–3.94, $p < 0.001$). Similarly, women with higher education were almost four times more likely to intend to use contraceptives (OR, 3.93; 95% CI: 1.96–7.90, $p < 0.001$).

Marital status also influenced contraceptive intention, with divorced women less likely to intend future use compared to married women (OR, 0.69; 95% CI, 0.44–1.08; $p = 0.103$). Women in the highest wealth quintile were more likely to intend to use contraceptives (OR: 1.78, 95% CI: 1.19–2.65, $p = 0.005$). Additionally, distance to health facilities was a significant factor, as women who considered distance "not a big problem" had higher intentions to use contraception (OR: 1.37, 95% CI: 1.08–1.74, $p = 0.011$). Employment status and residence also impacted intentions, with non-working women less likely to intend contraceptive use (OR: 0.62, 95% CI: 0.43–0.89, $p = 0.01$) and nomadic women showing significantly lower intentions compared to urban residents (OR: 0.40, 95% CI: 0.28–0.57, $p < 0.001$).

Multivariable analysis of factors associated with contraceptive use intention

Multivariate logistic regression analysis (Table 3) confirmed that education, age, and regional factors were significant predictors of contraceptive intention. Women with secondary education were nearly twice as likely to use contraception compared to those with no formal education (AOR: 1.91, 95% CI: 1.12–3.26, $p = 0.018$). The likelihood of intending to use contraception was higher for women with higher education (AOR, 2.34; 95% CI: 1.21–4.56, $p = 0.012$). Age remained a significant factor, with women aged 40–44 and 45–49 having reduced odds of contraceptive intention compared to younger women aged 15–19 (AOR: 0.39, 95% CI: 0.20–0.75, $p = 0.005$; AOR: 0.31, 95% CI: 0.12–0.84, $p = 0.021$).

Employment status and regional disparities persisted in the multivariable model. Women not working were less likely to intend to use contraceptives (AOR: 0.67, 95% CI: 0.47–0.97, $p = 0.032$), while nomadic women continued to show lower intentions than urban residents (AOR: 0.40, 95% CI: 0.23–0.68, $p = 0.001$). Regional analysis showed that women in Woqooyi Galbeed were nearly twice as likely to intend to use contraceptives compared to women in Awdal (AOR: 1.92, 95% CI: 1.08–3.42, $p = 0.026$), whereas women in Sool and Sanaag had lower intentions (AOR: 0.48, 95% CI: 0.25–0.94, $p = 0.033$; AOR: 0.44, 95% CI: 0.23–0.82, $p = 0.009$).

Discussion

The findings of this study provide critical insights into the prevalence and determinants of contraceptive intentions among Somali women, revealing significant disparities shaped by sociodemographic and geographic factors. The overall prevalence of contraceptive intention was 7.6%, highlighting a significant gap in contraceptive demand. However, low contraceptive intention should not be equated with an unmet need for family planning. While unmet need refers to women who desire contraception but lack access, low intention may stem from cultural norms, misinformation, or a low perceived risk of pregnancy [2, 3]. Addressing these factors requires targeted awareness campaigns rather than simply increasing contraceptive availability [6, 22]. The low contraceptive intention observed in this study aligns with findings from other conservative settings where religious and cultural beliefs strongly influence reproductive behaviors [23, 24]. However, Somalia's rate is significantly lower than Ethiopia and Ghana, where contraceptive intention ranges from 45.76 to 49.3% [25–27]. This substantial gap may be attributed to Somalia's deeply rooted religious conservatism, which often discourages contraceptive use [9, 28]. In contrast, Ethiopia and Ghana have benefited from structured family planning programs, increasing awareness and accessibility of contraceptive methods [29, 30].

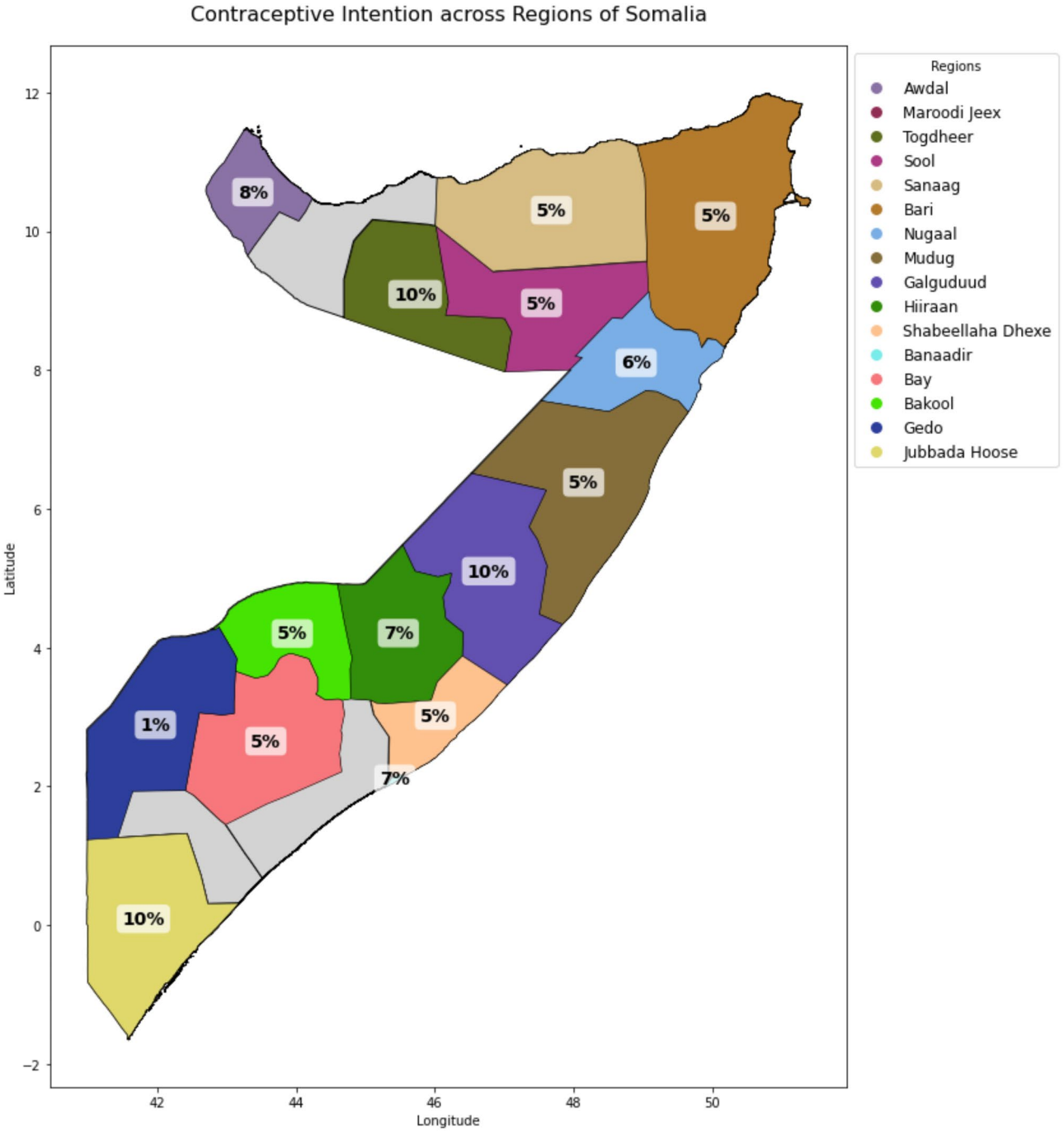

Fig. 2 Map of Somalia showing the distribution of contraceptive intention across the regions

In addition to religious conservatism, Somalia's weak healthcare infrastructure and high illiteracy rates further contribute to low contraceptive intention. In this study, 84% of women had no formal education, which is strongly associated with lower reproductive health literacy and limited awareness of contraception [31]. Unlike Kenya, where government-led family planning programs have improved contraceptive awareness, Somalia lacks large-scale reproductive health initiatives integrated into primary healthcare services [32, 33]. Furthermore, misconceptions about contraceptive side effects, limited decision-making autonomy among women, and strong societal norms favoring large families further reduce the likelihood of contraceptive adoption [34]. These findings highlight the need for culturally appropriate interventions, particularly those engaging religious and community leaders to promote accurate information about family planning [23, 35].

Table 2 Bivariate analysis of sociodemographic factors associated with contraceptive use intention

Variable	Contraceptive Use Intention		OR [95% CI]	*P*-value
	No Intent	Intent		
Age Group				
15–19	548 (92.8%)	42 (7.2%)	1	-
20–24	1,273 (91.2%)	123 (8.8%)	1.25 [0.78–1.99]	0.354
25–29	1,705 (92.0%)	149 (8.0%)	1.13 [0.72–1.78]	0.589
30–34	1,303 (91.3%)	125 (8.7%)	1.24 [0.77–1.99]	0.377
35–39	1,259 (93.0%)	95 (7.0%)	0.98 [0.60–1.59]	0.928
40–44	791 (96.4%)	29 (3.6%)	0.48 [0.25–0.92]	0.028
45–49	497 (97.0%)	15 (3.0%)	0.40 [0.16–1.05]	0.063
Education Level				
No education	6,248 (93.4%)	445 (6.7%)	1	-
Primary	863 (92.0%)	78 (8.3%)	1.27 [0.93–1.73]	0.129
Secondary	201 (85.5%)	35 (14.9%)	2.42 [1.49–3.94]	< 0.001
Higher	76 (78.2%)	21 (21.9%)	3.93 [1.96–7.90]	< 0.001
Marital Status				
Married	6,387 (92.4%)	527 (7.6%)	1	-
Divorced	677 (94.6%)	39 (5.4%)	0.69 [0.44–1.08]	0.103
Widowed	324 (96.1%)	13 (3.9%)	0.50 [0.20–1.25]	0.137
Wealth Quintile				
Lowest	1,741 (94.3%)	105 (5.7%)	1	-
Second	1,478 (95.7%)	66 (4.3%)	0.74 [0.47–1.18]	0.207
Middle	1,364 (91.0%)	135 (9.0%)	1.64 [1.09–2.47]	0.017
Fourth	1,516 (91.9%)	134 (8.1%)	1.46 [0.98–2.18]	0.062
Highest	1,289 (90.3%)	138 (9.7%)	1.78 [1.19–2.65]	0.005
Distance to Health Facility				
Big problem	4,646 (93.5%)	321 (6.5%)	1	-
Not a big problem	2,739 (91.4%)	258 (8.6%)	1.37 [1.08–1.74]	0.011
Woman's Work Status				
Working	592 (89.3%)	71 (10.7%)	1	-
Not Working	6,794 (93.1%)	508 (6.9%)	0.62 [0.43–0.89]	0.01
Residence				
Urban	1,846 (92.6%)	147 (7.4%)	1	-
Rural	4,565 (92.3%)	378 (7.7%)	1.04 [0.81–1.35]	0.752
Nomadic	978 (94.8%)	53 (5.2%)	0.40 [0.28–0.57]	< 0.001
Region				
Awdal	713 (91.7%)	64 (8.3%)	1	-
Woqooyi Galbeed	468 (81.6%)	106 (18.4%)	2.49 [1.40–4.46]	0.002
Togdheer	261 (90.0%)	29 (10.0%)	1.23 [0.70–2.19]	0.472
Sool	578 (95.5%)	28 (4.5%)	0.53 [0.27–1.02]	0.057
Sanaag	815 (95.4%)	39 (4.6%)	0.53 [0.29-1.00]	0.051
Bari	482 (95.3%)	24 (4.7%)	0.55 [0.26–1.15]	0.111
Nugaal	795 (93.7%)	53 (6.3%)	0.75 [0.38–1.47]	0.398
Mudug	850 (95.5%)	40 (4.5%)	0.52 [0.26–1.06]	0.071
Galgaduud	773 (89.6%)	90 (10.4%)	1.29 [0.70–2.38]	0.414
Hiraan	410 (93.2%)	30 (6.8%)	0.81 [0.41–1.57]	0.528
Middle Shabelle	268 (94.6%)	15 (5.4%)	0.64 [0.29–1.38]	0.252
Banadir	416 (93.5%)	29 (6.5%)	0.77 [0.44–1.36]	0.376
Bay	64 (95.2%)	3 (4.8%)	0.56 [0.24–1.35]	0.197
Bakool	286 (95.0%)	15 (5.0%)	0.59 [0.28–1.22]	0.151
Gedo	99 (98.9%)	1 (1.1%)	0.13 [0.05–0.33]	< 0.001
Lower Juba	105 (90.0%)	12 (10.0%)	1.29 [0.64–2.58]	0.48

Table 3 Multivariable analysis of factors associated with contraceptive use intention

Variable	Contraceptive Use Intention		AOR [95% C.I]	*P*-value
	No Intent	Intent		
Age Group				
15–19	548 (92.8%)	42 (7.2%)	1	-
20–24	1,273 (91.2%)	123 (8.8%)	1.12 (0.70–1.79)	0.640
25–29	1,705 (92.0%)	149 (8.0%)	1.00 (0.63–1.59)	0.989
30–34	1,303 (91.3%)	125 (8.7%)	1.12 (0.68–1.83)	0.666
35–39	1,259 (93.0%)	95 (7.0%)	0.83 (0.50–1.39)	0.479
40–44	791 (96.4%)	29 (3.6%)	0.39 (0.20–0.75)	0.005
45–49	497 (97.0%)	15 (3.0%)	0.31 (0.12–0.84)	0.021
Education Level				
No Education	6,248 (93.4%)	445 (6.7%)	1	-
Primary	863 (92.0%)	78 (8.3%)	0.91 (0.65–1.28)	0.580
Secondary	201 (85.5%)	35 (14.9%)	1.91 (1.12–3.26)	0.018
Higher	76 (78.2%)	21 (21.9%)	2.34 (1.21–4.56)	0.012
Marital Status				
Married	6,387 (92.4%)	527 (7.6%)	1	-
Divorced	677 (94.6%)	39 (5.4%)	0.58 (0.37–0.91)	0.018
Widowed	324 (96.1%)	13 (3.9%)	0.55 (0.20–1.48)	0.236
Wealth Quintile				
Lowest	1,741 (94.3%)	105 (5.7%)	1	-
Second	1,478 (95.7%)	66 (4.3%)	0.62 (0.37–1.04)	0.070
Middle	1,364 (91.0%)	135 (9.0%)	0.85 (0.50–1.46)	0.556
Fourth	1,516 (91.9%)	134 (8.1%)	0.75 (0.43–1.28)	0.288
Highest	1,289 (90.3%)	138 (9.7%)	0.66 (0.37–1.17)	0.155
Distance to Health Facility				
Big problem	4,646 (93.5%)	321 (6.5%)	1	-
Not a big problem	2,739 (91.4%)	258 (8.6%)	1.19 (0.91–1.56)	0.202
Work Status				
Working	592 (89.3%)	71 (10.7%)	1	-
Not Working	6,794 (93.1%)	508 (6.9%)	0.67 (0.47–0.97)	0.032
Residence				
Urban	1,846 (92.6%)	147 (7.4%)	1	-
Rural	4,565 (92.3%)	378 (7.7%)	1.12 (0.83–1.51)	0.459
Nomadic	978 (94.8%)	53 (5.2%)	0.40 (0.23–0.68)	0.001
Region				
Awdal	713 (91.7%)	64 (8.3%)	1	-
Woqooyi Galbeed	468 (81.6%)	106 (18.4%)	1.92 (1.08–3.42)	0.026
Togdheer	261 (90.0%)	29 (10.0%)	1.16 (0.65–2.06)	0.623
Sool	578 (95.5%)	28 (4.5%)	0.48 (0.25–0.94)	0.033
Sanaag	815 (95.4%)	39 (4.6%)	0.44 (0.23–0.82)	0.009
Bari	482 (95.3%)	24 (4.7%)	0.49 (0.23–1.04)	0.064
Nugaal	795 (93.7%)	53 (6.3%)	0.60 (0.31–1.19)	0.145
Mudug	850 (95.5%)	40 (4.5%)	0.43 (0.21–0.87)	0.019
Galgaduud	773 (89.6%)	90 (10.4%)	1.00 (0.55–1.83)	0.999
Hiraan	410 (93.2%)	30 (6.8%)	0.67 (0.34–1.30)	0.233
Middle Shabelle	268 (94.6%)	15 (5.4%)	0.54 (0.25–1.17)	0.118
Banadir	416 (93.5%)	29 (6.5%)	0.53 (0.30–0.94)	0.030
Bay	64 (95.2%)	3 (4.8%)	0.39 (0.16–0.95)	0.039
Bakool	286 (95.0%)	15 (5.0%)	0.44 (0.20–0.97)	0.041
Gedo	99 (98.9%)	1 (1.1%)	0.11 (0.04–0.28)	0.000
Lower Juba	105 (90.0%)	12 (10.0%)	0.99 (0.48–2.05)	0.972

Regional disparities in contraceptive intentions were pronounced, with Woqooyi Galbeed reporting the highest prevalence at 18.4%, while Gedo recorded the lowest at 1.1%. These variations underscore the uneven distribution of healthcare resources and family planning services across Somalia. Regions with higher contraceptive intentions, such as Woqooyi Galbeed, benefit from better healthcare access and targeted family planning programs [36, 37]. Conversely, underserved regions, such as Gedo, face significant logistical challenges, exacerbated by conflict and inadequate infrastructure, limiting access to reproductive health services [38]. Cultural differences may further discourage family planning in more conservative regions where opposition to contraception remains high [22].

Education emerged as one of the strongest predictors of contraceptive intention. Women with secondary education were nearly twice as likely to intend to use contraception (AOR: 1.91, 95% CI: 1.12–3.26), and those with higher education showed an even stronger association (AOR: 2.34, 95% CI: 1.21–4.56). These findings align with studies from Nigeria, Ethiopia, and Ghana, where formal education significantly increases contraceptive awareness and uptake (Nyarko, 2015; Worku et al., 2022). Education not only enhances knowledge of reproductive health but also empowers women to make autonomous contraceptive decisions [17, 39, 40]. The extremely low contraceptive intention rate among women with no formal education, combined with Somalia's high illiteracy rate, suggests an urgent need for targeted reproductive health education programs. These efforts should focus on rural and nomadic populations where school attendance is low, addressing knowledge gaps and dispelling misconceptions surrounding contraception [19, 41].

Economic disparities also influenced contraceptive intention. Women in the highest wealth quintile were more likely to intend to use contraception (AOR: 0.66, 95% CI: 0.37–1.17), consistent with findings from Kenya and Uganda, where financial stability is associated with greater contraceptive use [24, 26, 42]. Economic security enhances access to healthcare, reduces financial barriers to contraception, and strengthens reproductive autonomy [43]. Conversely, women in the lowest and second wealth quintiles (42.56%) faced systemic economic constraints that limited their ability to access reproductive health services, reinforcing disparities in family planning utilization [44]. Geographic disparities further compounded these inequalities, as urban women demonstrated higher contraceptive intention (7.4%) compared to nomadic women (5.2%) (AOR: 0.40, 95% CI: 0.23–0.68). Mobility restrictions, limited healthcare access, and cultural traditions emphasizing large families likely contributed to these differences [36, 45]. Addressing these barriers requires innovative solutions such as mobile health clinics and community-based outreach programs tailored to the needs of nomadic and rural populations [46].

Cultural and religious beliefs continue to play a significant role in shaping contraceptive decision-making in Somalia. Previous research indicates that traditional norms and religious doctrines often present significant barriers to family planning, as contraceptive use is perceived to contradict Islamic teachings [23, 47]. Opposition to contraception is particularly strong in rural and conservative communities where religious leaders hold substantial influence over reproductive health decisions [23]. To address these challenges, future interventions should integrate culturally sensitive educational campaigns that actively engage religious and community leaders in family planning advocacy [12, 48]. Additionally, integrating family planning education into broader maternal and child health initiatives may facilitate greater acceptance of contraception and improve reproductive health outcomes in Somalia [49].

Conclusion

This study highlights significant regional and sociodemographic disparities in contraceptive intention among Somali women, with education, wealth, and residence emerging as key determinants. The findings indicate that women with higher education levels and greater economic stability are more likely to intend to use contraception, emphasizing the role of education and financial autonomy in reproductive decision-making. The particularly low contraceptive intention rate (7.6%) in Somalia, compared to other sub-Saharan African countries, underscores the need for targeted interventions to address misconceptions, cultural barriers, and healthcare access limitations. The study also reinforces the importance of recognizing nomadic populations as a distinct group with unique healthcare challenges. While the findings contribute to understanding contraceptive intention in Somalia, further research incorporating qualitative insights and multilevel modeling could provide a more comprehensive perspective on contextual and structural influences. Strengthening reproductive health education, expanding access to family planning services, and engaging community leaders are essential steps toward improving contraceptive uptake and reproductive autonomy among Somali women.

Limitation

This study has several limitations that should be acknowledged. First, the cross-sectional nature of the 2020 Somali Demographic and Health Survey (SDHS) limits the ability to establish causal relationships between contraceptive intention and its determinants. Additionally, contraceptive intention was self-reported, making

the findings susceptible to social desirability bias, where participants may have overstated or understated their intentions due to cultural or societal influences. Another limitation is the exclusion of multilevel modelling, which could have accounted for hierarchical influences such as community-level and regional factors. However, incorporating a multilevel approach would require a fundamental restructuring of the analytical framework and shift the study's focus from individual determinants to broader contextual influences, which was beyond the scope of this research. Furthermore, while DHS data is nationally representative, nomadic populations in remote areas may be underrepresented, potentially affecting the generalizability of findings to all subpopulations. Despite these limitations, this study provides valuable insights into the sociodemographic disparities in contraceptive intention among Somali women, offering a foundation for targeted reproductive health interventions.

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Author contributions
JS: conceptualized, designed, and conducted the study, including data analysis, visualization, and writing the original draft. MMA: contributed data curation and provided oversight and editing.

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Data availability
This research did not involve the collection of primary data. The findings are based on secondary data from the 2020 Somali Demographic and Health Survey (SDHS), which is publicly accessible via the DHS website: https://microdata.nbs.gov.so.

Declarations

Ethics approval and consent to participate
This study utilized secondary data from the 2020 Somali Demographic and Health Survey (SDHS), conducted in accordance with established ethical guidelines. The research complied with ethical principles by obtaining the necessary approvals from the Somalia National Health Research Ethics Committee and the ICF Institutional Review Board. Informed consent was secured from all participants prior to data collection, ensuring that their rights and confidentiality were upheld throughout the research process.

Competing interests
The authors declare no competing interests.

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