

# Contraceptive use among people with disabilities in sub-Saharan Africa: A systematic review and meta-analysis

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## Abstract

In sub-Saharan Africa, there are different studies on contraceptive use and associated factors among people with disabilities. However, the findings are inconsistent and inconclusive. This study aimed to estimate the pooled prevalence of contraceptive use and associated factors among women with disabilities in sub-Saharan Africa. Comprehensive search was performed from different databases. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis guideline was followed to report the results. The data were analyzed by using STATA software. Heterogeneity and publication bias was checked. The pooled odds ratio (POR) with a 95% confidence interval (CI) was used to report the measures of associations. The pooled prevalence of contraceptive use was 25.61% (95% CI: 20.68, 30.54). Being married (POR = 2.96; 95% CI: 1.31, 4.62), high income (POR = 2.20; 95% CI: 1.42, 2.97), having media access (POR = 1.74; 95% CI: 1.24, 2.23), being in the age group of 25–34 (POR = 2.52; 95% CI: 1.01, 3.94), vision impairment (POR = 3.82; 95% CI: 2.05, 5.59), good contraceptive knowledge (POR = 2.09; 95% CI: 1.27, 2.91), primary education (POR = 1.82; 95% CI: 1.25, 2.39), secondary education (POR = 2.31; 95% CI: 1.03, 3.59) and tertiary educational status (POR = 3.37; 95% CI: 1.28, 5.46) were factors associated with contraceptive use. Contraceptive use among women with disabilities is considerably low in sub-Saharan Africa. The use of contraceptives is primarily dependent on socio-demographic and economic status.

## Keywords

Disability, contraceptive, utilization, associated factors, sub-Saharan Africa, meta-analysis

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## Introduction

The definition of disabilities varies from country to country specifically in its meaning, scope, and severity.<sup>1,2</sup> World Health Organization (WHO) defines disabilities as; any impairment of a person's body function or structure or mental functioning, activity limitation, and participation restriction (environmental factors).<sup>2</sup>

Worldwide, more than one billion (15%) of the world population are people with disabilities, of which 75%–80% are from developing countries.<sup>3</sup> This population is the most discriminated against and marginalized group from contraceptive use in many countries, mainly in sub-Saharan African countries.<sup>4–6</sup>

Contraception is the intentional prevention of pregnancy by using different contraceptive methods like chemicals, drugs and surgical procedures.<sup>7</sup> Although access and utilization of contraceptives is a reproductive right, its

coverage remains undoubtedly low in people with disabilities. There is also considerable variation in the prevalence in which prevalence of contraceptive use in developing countries is significantly lower than the developed ones. This is corroborated by the following findings: the prevalence was 70.1%<sup>8</sup> in the United States of America, 67.4%<sup>9</sup> in Turkey, 17%<sup>10</sup> in Ghana, 34%<sup>11</sup> to 51%<sup>12</sup> in Nigeria, 26.1%<sup>13</sup> in Uganda, 16%<sup>14</sup> in Kenya 26.9%<sup>15</sup> in Sierra Leon, and 18%<sup>16</sup> to 34%<sup>17</sup> in Ethiopia.

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Moreover, multitudes of factors associated with contraceptive use among people with disabilities were identified in sub-Saharan African countries (Sierra Leon, Uganda, Kenya, and Ethiopia). Among the factors; are access to media, marital status, working actively, income, age, ANC follow-up, types of disabilities, women's attitude toward family planning methods, knowledge about family planning, the presence of nearby health facilities providing planning of family services, keeping confidentiality and privacy by the health facility, having good self-perception, educational and economic status were the most commonly identified factors.<sup>14,16-20</sup>

However, the findings of the primary studies are very inconsistent. Contraceptive use ranges from 10%<sup>21</sup> in Nigeria to 45.4%<sup>22</sup> in Ethiopia. Likewise, the identified associated factors vary from country to country. Thus, computing the pooled prevalence of contraceptive use and associated factors among people with disabilities is very crucial for the scientific community, policymakers, and program designers to develop strategies that could tackle contraceptive use barriers.

Therefore, this study aimed to estimate the pooled prevalence of contraceptive use and identify the factors associated with contraceptive use among people with disabilities in sub-Saharan Africa.

## Significance for public health

To date the prevalence of contraceptive use and associated factors among people with disabilities in sub-Saharan Africa. And the findings of this study will be informative to take prompt measures.

## Methods

### Searching strategies and data sources

We included articles published from 2011 to January 2022 and searched from different databases (PubMed (contains MEDLINE), Cochran Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL) (EBSCO), WHO's Institutional Repository for Information Sharing (IRIS), African Journals Online (AJOL)). Grey literature sources such as Google Scholar Google, Elsevier's Scirus, science citation index and WorldCat were also explored to retrieve articles. The reference lists of included articles and previous reviews were cross-checked to identify additional articles. Articles were managed using EndNote X20 software. All retrieved articles were exported to this software and the removal of duplicated articles and reference citations was performed using this software. The Boolean search operators such as "AND," and "OR" were used during the search process. Before the actual search, key terms were verified for appropriateness. The following search string was employed to search articles from PubMed:

(((((("prevalence"[Title] OR "magnitude"[Title] OR "coverage"[Title] OR "utilization"[Title] OR "determinants"[Title] OR "associated factors"[Title]) AND "Contracepti\*" OR "family planning" AND "disab\*" [Title] AND "Africa" OR "sub-Saharan Africa"[Title] OR "developing countries"[Title] OR "low income countries" AND ("humans"[MeSH Terms] AND "female"[MeSH Terms] AND 2011/01/01:3000/12/12[Date - Publication])) [Title]) [Title]) [Title]) AND ((humans [Filter]) AND (female [Filter]) AND (2011:3000/12/12[pdat]))

Finally, the Population (people with disabilities) and Outcome (Contraceptive use and associated factors) were followed in the search process.

### Inclusion and exclusion criteria

The two authors (Zelalem Tenaw & Zebenay Workneh Bitew) selected the articles included in this study by exploring the title, abstract, study country, study population, and study design of the articles. In this study, observational studies (cross-sectional, case-control, cohort) reporting contraceptive use and factors were included. To compute the pooled odds ratio (POR), the crude odds ratio (COR) reported by the primary studies was used and studies using odds ratio (OR) to report the association were included. Studies not reporting the outcome of interests, systematic reviews and meta-analyses, non-human studies, qualitative studies, case reports, conference proceedings, case series, double publications using similar data, editorial comments, and studies conducted other than in the English language were excluded from the current study.

### Data extraction procedure

The data were extracted from the included articles by using a standard tool prepared in Microsoft Excel 2013. The two investigators (ZT & ZWB), extracted the data independently. The data were cleaned and ready for the final analysis after extraction using the spreadsheet. The data extraction format included: the name of the author (s), publication year, study country, study design, calculated sample sizes, the prevalence of contraceptive use, and associated factors with contraceptive use with odds ratio.

### Quality assessment

Quality appraisal was done by two authors (Zelalem Tenaw & Zebenay Workneh Bitew) independently using Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Observational Studies.<sup>23</sup> The checklists have: Yes, No, Unknown, and Not Applicable options. One is given for yes and zero for all other options. The scores were summed up and changed into percentages. Studies with a quality score of >50% were included in the current study (see S2

Table). Before the inclusion of articles, differences between the authors in the quality assessment process were solved through discussion.

### Outcome measurement

In this study, identifying the associated factors with contraceptive use was the primary outcome. The other outcome was computing the pooled prevalence of contraceptive use among people with disabilities in sub-Saharan Africa. The associated factors with contraceptive use were identified using PORs with a 95% confidence interval. Variables with a pooled odds ratio (POR) not containing one in the 95% CI were taken as the independently associated factors.

### Statistical methods and analysis

STATA Version 16 (STATA Corporation, College Station Texas) software was used to compute the pooled odds ratio. The effect sizes were the log odds ratios indicating the associated factors with contraceptive use among people with disabilities in sub-Saharan Africa. The log odds ratios were converted to an exponent of log odds ( $POR = e^{logOR}$ ) to report the associated factors. Pooled estimates were computed by using both random and fixed-effect models. However, a random-effect model was used to report the final pooled estimates due to high heterogeneity among the included studies. By using subgroup and univariate Meta-regression, the possible sources of heterogeneities among the included studies were checked. The pooled estimates were presented with their 95% CI. The results of this study were presented using texts, forest plots, and summary tables.

### Publication bias and heterogeneity

The presence of publication bias was checked by looking at the symmetry of the funnel plot. If there is publication bias, the funnel plot is asymmetric and confirmed by Egger's regression test at a  $p$ -value  $< 0.05$ .<sup>24</sup> Heterogeneity ( $I^2$ ) is the variation in study outcomes between studies.<sup>25</sup> To detect heterogeneity among studies, a forest plot test and the Cochrane Q statistics and  $I^2$  were used.<sup>26</sup> The  $I^2$  values of 25% was interpreted as low, 50% as medium, and 75% and above as high.<sup>27</sup>

**Ethical consideration:** Not applicable

## Results

### Identification of articles

In the initial search of this systematic review and meta-analysis, 4388 articles were found from reputable databases and grey literature sources. Finally, 13 articles<sup>10,11,13,15-22,28,29</sup>

were found eligible for this study. Of these articles, six articles were excluded from meta-analyses.<sup>10,11,21,22,28</sup> To estimate the pooled prevalence of contraceptive use among people with disabilities in sub-Saharan Africa, all 13 articles were fitted (Figure 1).

### Description of articles

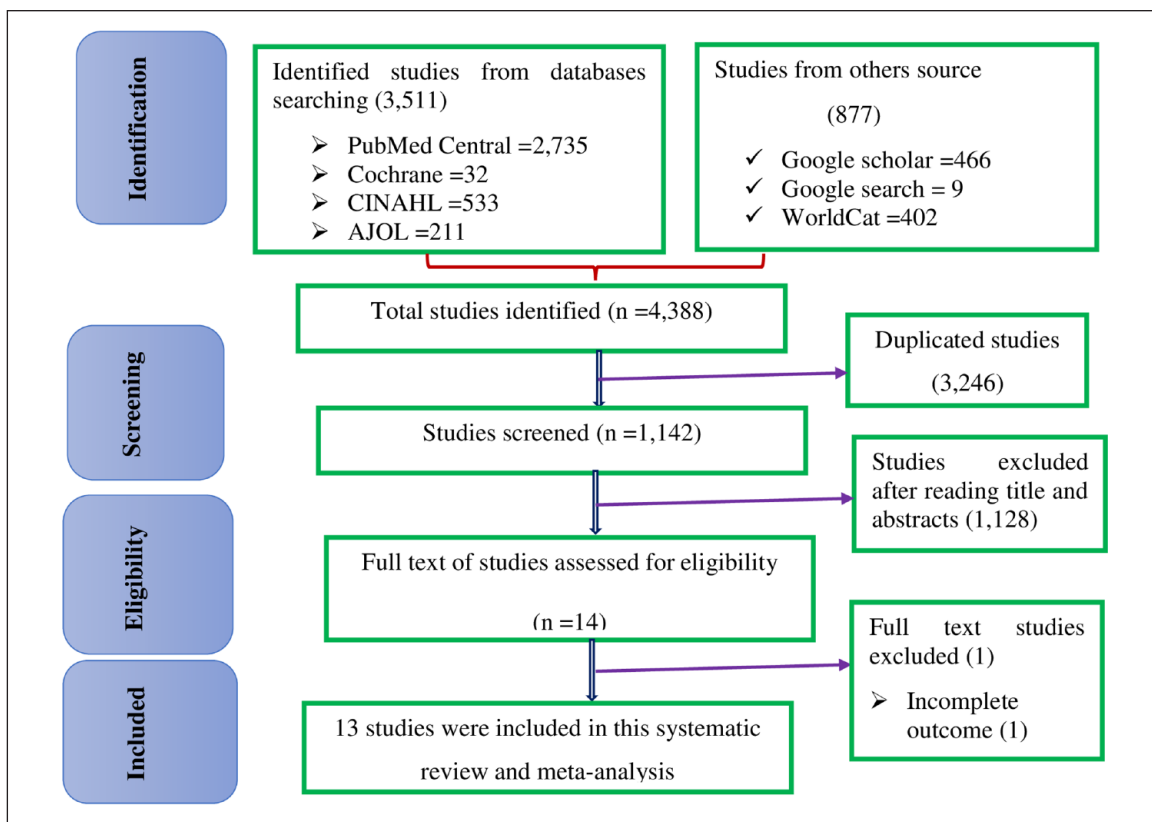
In this systematic review and meta-analysis, 13 articles were included. The pooled prevalence of contraceptive use was computed from 6434 study populations. The sample size of the original articles ranged from 174<sup>22</sup> to 1880.<sup>10</sup> Articles published from 2011 to 2021 were included in this study. The lowest prevalence (10%) of contraceptive use was reported in a study conducted among adolescents with learning disabilities in Nigeria,<sup>21</sup> whereas the highest prevalence (45.4%) was reported in a study done in Ethiopia among youth with disabilities.<sup>22</sup> Although the inclusion criteria considered all observational studies, all the studies included in this systematic review and meta-analysis were cross-sectional studies. Four studies were conducted among women with disabilities and three studies among reproductive-age women with disabilities. Likewise, a single study was conducted among each; blind and deaf women, an adolescent with learning disabilities, people with disability, youth with disability, reproductive age with a disability, adolescents with physical disabilities, and young people with disability. Of the total 13 articles, seven were conducted in Ethiopia, two in Nigeria, and others in conducted in Sierra Leon, Kenya, Uganda, and Ghana. Finally, by using the JBI checklist the qualities of articles were appraised. Accordingly, six articles were classified as high quality, whereas seven articles were classified as medium quality.

### The pooled prevalence of contraceptive use

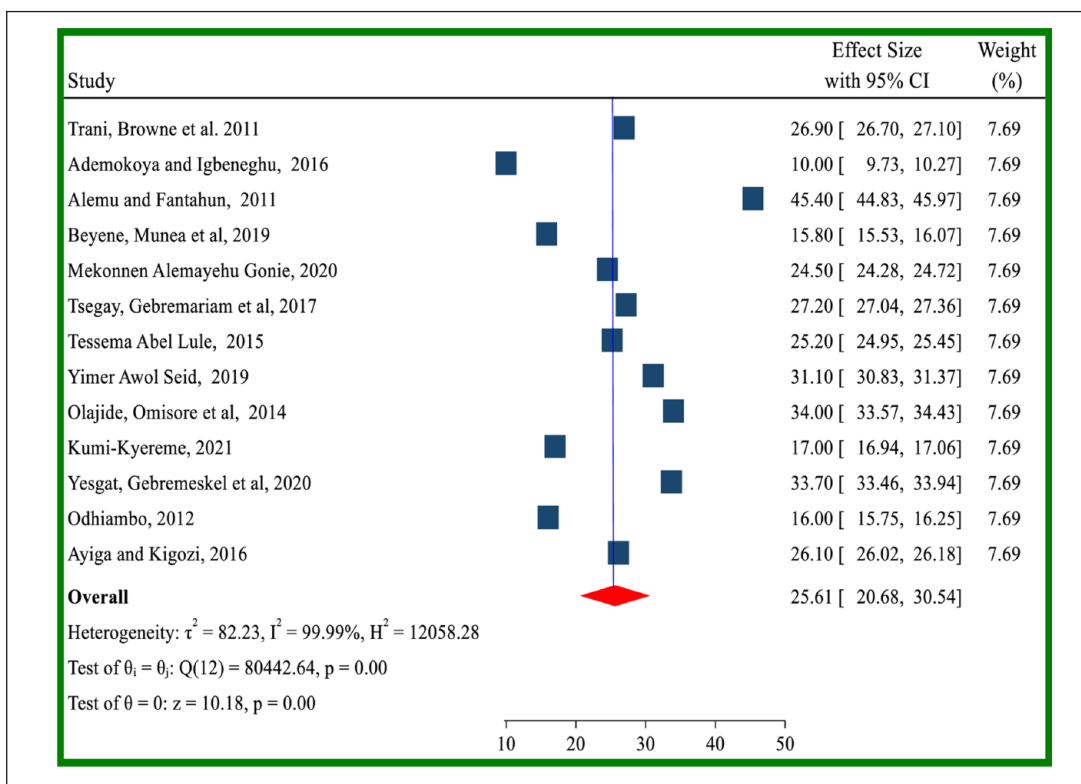
The pooled prevalence of contraceptive use was 25.61% (95% CI: 20.68, 30.54) in a random effect model with a remarkable heterogeneity among the included articles ( $I^2 = 99.99\%$ ,  $p < 0.001$ ) (Figure 2). Both the funnel plot and Egger's test ( $p = 0.02$ ) showed the presence of publication bias. Univariate meta-regression was performed to check the possible effect of sample size on heterogeneity, and it was found to be a significant source of heterogeneity ( $p < 0.001$ ).

### Sub-group analysis of contraceptive use among people with disabilities in sub-Saharan Africa

The subgroup analysis was done based on the country and the study population. Based on the country analysis the highest prevalence was recognized in Ethiopia (28.98%, 95% CI: 24.36, 33.60) of people with disabilities were



**Figure 1.** PRISMA flow chart of study selection for a systematic review and meta-analysis of prevalence and associated factor with contraceptive use among people with disabilities in sub-Saharan Africa, 2022.  
 IRIS: World Health Organization’s Institutional Repository for information Sharing, AJOL: African Journals Online.



**Figure 2.** Forest plot for the pooled prevalence of contraceptive use among people with disabilities in sub-Saharan Africa, 2022. Random-effects ML model.

**Table 1.** Sub-group analysis of contraceptive use among people with disabilities in sub-Saharan Africa, 2022.

Variables	Subgroup	No of studies	Contraceptive use (95% CI)	I <sup>2</sup> , p-value
Country	Sierra Leon	01	26.90 (26.70, 27.10)	-
	Nigeria	02	22 (-1.52, 45.52)	(100%, <0.001)
	Ethiopia	07	28.98 (24.36, 33.60)	(100%, <0.001)
	Ghana	01	17 (16.94, 17.06)	-
	Kenya	01	16 (15.75, 16.25)	-
	Uganda	01	26.10 (26.02, 26.18)	-
	Overall heterogeneity			
Population	Women with disabilities	04	26.29 (26.19, 26.38)	(100%, <0.001)
	People with disability	01	26.90 (26.70, 27.10)	-
	Adolescents with learning disabilities	01	10 (9.73, 10.27)	-
	Youth with disability	01	45.40 (44.83, 45.97)	-
	Reproductive age people with disability	01	24.50 (24.28, 24.72)	-
	Reproductive age women with disabilities	03	26.73 (26.66, 26.80)	(99.9%, <0.001)
	Blind and deaf	01	31.10 (30.83, 31.37)	-
	Adolescents with physical disabilities	01	34 (33.57, 34.43)	-
	Young people with disabilities	01	17 (16.94, 17.06)	-
	Overall heterogeneity			

found to use contraceptives. Regarding the study population, the highest prevalence of contraceptive use was 45.40 (44.83, 45.97) among youth with disabilities (Table 1).

### Factors associated with contraceptive use among people with disabilities

Of the associated factors with contraceptive use, being married (POR=2.96; 95% CI: 1.31, 4.62), high income (POR=2.20; 95% CI: 1.42, 2.97) relative to poor, having media access (POR=1.74; 95% CI: 1.24, 2.23), being in the age group of 25–34 (POR=2.52; 95% CI: 1.01, 3.94), compared to age 15–24, vision impairment (POR=3.82; 95% CI: 2.05, 5.59) relative to deaf, good contraceptive knowledge (POR=2.09; 95% CI: 1.27, 2.91) compared with poor contraceptive knowledge, primary education (POR=1.82; 95% CI: 1.25, 2.39), secondary education (POR=2.31; 95% CI: 1.03, 3.59) and tertiary educational status (POR=3.37; 95% CI: 1.28, 5.46) compared with no education were the significant associated factors with contraceptive use among people with disabilities in sub-Saharan Africa (See S1 Figures, Table 2).

### Discussion

The pooled prevalence of contraceptive use among people with disabilities in sub-Saharan Africa was 25.61%. Marital status, educational level and status, income, media access, age group, types of impairment, and contraceptive knowledge are the identified associated factors with contraceptive use among people with disabilities in sub-Saharan Africa. Country, types of disability, and sample size are found to be the source of the heterogeneity.

This pooled prevalence (25.61%) is lower than the findings of studies conducted in the United States of America 70.1%.<sup>8</sup> The possible explanation for the discrepancies might be associated with the difference in the sample size (744 in the USA and 6434 in this study)<sup>8</sup> and maybe the socio-cultural differences in the study population. People with disabilities in developing countries are considered sexually inactive and marginalized in the use of contraceptives.<sup>30–32</sup> The sub-group analysis showed that there is a significant difference in contraceptive use among sub-Saharan African countries and types of people with disabilities. The highest contraceptive use was found in Ethiopia 28.98%, but the lowest contraceptive use 10% was reported in Kenya. The pooled prevalence revealed that there is a noticeable difference between youth with disability (45.4%) and adolescents with learning disability (10%) in contraceptive use. The possible reason for this difference might be the poor understanding and communication ability of adolescents with learning disabilities about the importance and use of contraceptives.<sup>21</sup>

In this study, married people with disabilities have a higher chance of contraceptive use than unmarried people with disabilities. The disparity could be that people with disabilities have a higher desire to prevent pregnancy,<sup>33</sup> and husbands' involvement and encouragement might increase the use of contraceptives.<sup>17</sup> The other significantly associated factors with contraceptive use among people with disabilities are educational level. People with disabilities who attended primary, secondary and tertiary education have a greater chance of contraceptive use compared to their counterparts with no education. This could be because education is the key to seeking information and eradicating traditional thoughts about bad rumors about

**Table 2.** Factors associated with contraceptive use among people with disabilities in sub-Saharan Africa, 2022.

Factors	Number of articles	POR	Heterogeneity ( $I^2$ , $p$ -value & model)	Reference category
Married	07	2.96 (1.31, 4.62)*	(84.39%, $p < 0.001$ , REM)	Unmarried
Primary education	04	1.82 (1.25, 2.39)*	(0.00%, $p < 0.001$ , REM)	No education
Secondary education	04	2.31 (1.03, 3.59)*	(64.66%, $p = 0.01$ , REM)	No education
Tertiary education	04	3.37 (1.28, 5.46)*	(60.22%, $p = 0.01$ , REM)	No education
Actively working	02	0.69 (0.06, 1.33)	(0.00%, $p = 0.09$ , REM)	Not working
Age 25–35	02	3.04 (0.09, 5.99)	(52.37%, $p = 0.02$ , REM)	Age 15–24
High income	03	1.31 (0.53, 2.07)*	(53.53%, $p < 0.001$ , REM)	Poor
Middle income	04	1.31 (0.53, 2.07)	(53.53%, $p = 0.02$ , REM)	Poor
Media access	02	1.74 (1.24, 2.23)*	(0.00%, $p < 0.001$ , REM)	No access
Health facility access without difficulty	02	4.64 (–0.89, 10.17)	(75.12%, $p < 0.001$ , REM)	No access
Age 25–34	02	2.52 (1.01, 3.94)*	(5.51%, $p < 0.001$ , REM)	Age 15–24
Vision impairment	02	3.82 (2.05, 5.59)*	(0.00%, $p < 0.001$ , REM)	Deaf
Good contraceptive knowledge	03	2.09 (1.27, 2.91)*	(0.00%, $p < 0.001$ , REM)	Poor knowledge

POR: pooled odds ratio; REM: random effect model.

\*Significant at  $p < 0.05$ .

the side effects and safety of using contraceptives.<sup>16,34</sup> Good contraceptive knowledge is the other associated factor with contraceptive use when compared with those having poor contraceptive knowledge. The reason seems justifiable since knowledge has a positive influence on the use of contraceptives.<sup>35</sup> The other associated factor is media access, the chance of contraceptive use increased with media access. Since media access is used to have information about different issues like the advantage of using contraceptives.<sup>16</sup> High income is the other associated factor with contraceptive use when compared with low income. The possible reason might be the increments in contraceptive provision by private health sectors and the uncontrolled payment for the services.<sup>36,37</sup> Being in the age group of 25 to 34 increased the chance of contraceptive use when compared with the 15 to 24 age group. The possible justification might be the increased chance of marriage and having unprotected sexual intercourse will increase. Due to the higher desire to prevent pregnancy<sup>33</sup> among people with disabilities the chance of using contraceptives will increase. People with visual impairment have a better chance of using contraceptives compared with people with hearing impairment. The possible reason might be that people with visual impairment had better information access from different channels like radio channels than people with hearing impairment.<sup>16</sup> Radio is the most available and important channel to access different information that is used to change the behavior of individuals to use contraceptives in developing countries.

These findings may be used by policymakers, program planners, and researchers. On the other hand, multiple sources were explored to identify research articles. However, articles included in this study assessed different study populations (people with disability, women with disability, adolescents with disability, youth with disability, reproductive-age people with disability, reproductive-age

women with disability, blind and deaf women, adolescents with physical disabilities, and young people with disability) to estimate contraceptive use. This is one of the limitations of this study because the higher heterogeneity in the pooled estimates originated from this problem. And also, the study period interval from 2011 to 2021 is too long and seems unreasonable to pool the prevalence of contraceptive use, but due to the attention given and the accessibility of contraceptive to people with disabilities are not shown a great difference between the study periods. Therefore, the pooling of the prevalence could be reasonable and useful.<sup>38</sup>

## Conclusion

Contraceptive use among people with disabilities is considerably low in sub-Saharan Africa. Being married, having good contraceptive knowledge, having a high income, having media access, being in the age group of 25–34, having vision impairment, and attending primary, secondary and tertiary education levels increased the use of contraceptives among people with disabilities. Therefore, policy makers have to encourage education for people with disabilities, design appropriate media access for people with disabilities, involve people with disabilities in income-generating activities to enhance contraceptive use in sub-Saharan Africa.

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## Authors' contributions

ZT, AG, TG and ZWB designed the review. ZT and ZWB conduct a comprehensive search and extract data. ZT analyze and writes the manuscript. AG, TG and ZWB comment on and edited the manuscript.

## Data availability

All the data are included in the manuscript (tables and graphs) and with the Supplemental Files

## Disclaimer

The view expressed in the submitted article is the author's own.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Supplemental material

Supplemental material for this article is available online.

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