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Filicide in Africa: a systematic review

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Abstract

Background Filicide, the act of a parent or parental figure killing their child, has been reported in various African countries. However, there is a lack of comprehensive reviews on the prevalence and associated factors of filicide across the African continent, which is characterized by diverse cultural beliefs and practices. This review aims to examine the prevalence and risk factors of filicide in Africa.

Methods This review included studies on filicide in Africa, identified through searches in various databases (*PubMed*, *Scopus*, *Africa Journal Online*, and *Google Scholar*) using relevant keywords. The Mendeley reference manager was used to organize all identified articles and remove duplicate entries. A two-round screening process was conducted by two independent reviewers, with the final set of articles selected through mutual agreement. The quality of the studies was then assessed.

Results Out of the 107 retrieved articles, only 15 were included in the review. These studies revealed diverse prevalence rates: 3.7% of total homicides, 1.38% of deaths from family violence, and 13.02% for autopsied children. Various potential risk factors for filicide were identified, including unwanted pregnancies, marital conflicts, family disputes and violence, low socio-economic status, mental health issues in perpetrators, and mental, physical, or neurological vulnerabilities in victims. Cultural beliefs were also recognized as contributing factors to filicide.

Conclusion Filicide is a complex and multi-dimensional issue influenced by various individual, familial, and societal factors. The review highlighted a high prevalence of filicide in Africa, shaped by these diverse factors.

Keywords Filicide, Infanticide, Neonaticide, Africa

Introduction

Filicide is defined as the murder of a child up to the age of 18 years by their parent(s) or parental figure(s), including guardians and stepparents [1]. Specific terms such as neonaticide, the killing of a newborn within the first 24 hours of life, and infanticide, the killing of a child under one year, are often used within the context of filicide for clarity [2]. Both men and women can commit filicide; however, there is more literature on maternal filicide [3, 4]. Filicide dates back to the beginning of history; for instance, King Solomon, in biblical times, judged a case of filicide involving two women of whom one had killed a child [5].

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Due to the absence of standardized data and challenges in accessibility, only a limited number of studies have effectively gauged the occurrence of filicide [4]. Neonaticide, a subtype of filicide, is often considered a concealed crime due to the difficulty in discovering the bodies [6]. The highest likelihood of filicide occurs within the first year of a child's life, referred to as neonaticide, as it allows for easier concealment of evidence [7]. Instances of neonaticide, such as the abandonment and dumping of infants in pit latrines, have been reported in various parts of Africa [8, 9]. One documented case occurred on June 23, 2022, when a young couple disposed of their baby in a pit latrine [10].

According to the World Health Organization (WHO), regions with the highest rates of homicide in children under the age of 5 include Sub-Saharan Africa and North America, while Europe and Asia report the lowest rates [11]. Despite this, South Africa stands out with one of the highest reported rates of neonaticide and infanticide, yet there is limited knowledge about the circumstances surrounding these incidents [11, 12]. Even though filicide significantly contributes to child homicide, there remains a scarcity of literature on this subject, particularly in the context of Africa [13].

Several studies have examined the motivations, psychopathological aspects, and socio-demographic factors of offenders and victims on a global scale [14]. However, there is a scarcity of literature exploring the reasons behind parents killing their children [4, 14]. Maternal filicide has been observed to be more prevalent than paternal filicide [4]. Mothers are more inclined to harm female children, while fathers are more likely to harm male children [14]. Additionally, younger victims are more prone to experiencing abuse by their parents [14]. The presence of a psychiatric disorder in one or both parents stands out as a significant risk factor for child murder by parents [14, 15]. Mothers, in particular, are more likely than fathers to have had a mental disorder, often with active symptoms at the time of the offense [14–16]. Even though men commit filicide at a comparable or higher rate than women, there has been limited research on paternal filicide [17]. Fathers are frequently implicated as perpetrators in cases of fatal abuse and filicide linked to battered child syndrome [14, 18]. Women who commit neonaticide typically exhibit characteristics such as being younger, unmarried, concealing or denying their pregnancies, lacking prenatal care, and having no plans for the child's care [19]. The primary motivating factor often appears to be the perceived undesirability of the child, although fear also plays a significant role [14]. To comprehend these acts and develop preventive strategies, it is crucial to identify additional risk factors and understand their potential interconnectedness.

African culture vastly differs from the rest of the world and is unique and special - socially, politically, and religiously [20]. Nevertheless, the belief that certain humans are spiritual entities and possessed can be found across all histories and cultures, often leading to tales of witch hunts and killings [21]. In Africa, certain groups of people, particularly children, are linked to mischievous spirits due to unusual appearance, aberrant behavior, disability, chronic illness, psychopathology, or exceptional ability, and are consequently mistreated due to events surrounding their birth [22]. Practices such as witchcraft-related violence and filicide in sub-Saharan Africa, for example, against children with albinism, are under-documented [23]. Some commonly known practices include killing albino children fueled by witchcraft in Tanzania and killing twin babies in Igbo culture in Nigeria [24]. In Uganda, children's body parts are also a source of witchcraft magic, leading to numerous kidnappings and killings [25].

Despite systematic reviews on filicide conducted worldwide [4, 26], few reviews have incorporated research done in Africa, despite Africa having a potentially heavy burden and unique cultural influence that led to filicide. In addition, many reviews are over 20 years old, when Africa had fewer publications about incidences such as filicide. A systematic review of articles on filicide in Africa is not available, leaving it a grey area and a particular area that requires special attention. Therefore, we conducted this review to advance our understanding, bring the topic to light, and obtain the recognition it deserves.

Methodology

This systematic literature review aimed to provide an overview of the African continent's filicide occurrence and risk factors. The review highlights the influence of cultural superstitions, the lack of reporting by law enforcement and media, and the limited mental health support system.

Reporting and registration

We followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) guidelines in this study [27] and pre-registered it on PROSPERO (CRD42022352923) in 2022.

Review question

We formed the review question using the Joanna Briggs Institute (JBI) mnemonic and CoCoPop (Condition, Context, and Population) [28]. The condition was filicide (including infanticide, neonaticide, and filicide), the context was Africa, and the population was parents, parent figures, guardians, or stepparents. Therefore, the review

question was: ‘What are the prevalence and risk factors for filicide in Africa?’

Study search strategy

The study reviewed available research on filicide conducted on the African continent, including neonaticide, infanticide, and filicide. A systematic literature review was performed in the following databases from June to November 2022: *PubMed*, *Scopus*, *Africa Journal Online*, and *Google Scholar*. Key terms used in the search included (I) filicide (filicide, infanticide, neonaticide, child murder, homicide, mercy killing, manslaughter, slaughter, sacrifice, dumping child, etc.), and (II) the list of the 56 African countries.

Study selection criteria

Every publication was initially screened in the first round based on the titles and abstracts. Then, the full text of each article was evaluated to determine inclusion. The inclusion criteria for articles were: (i) studies documenting filicide within the African continent (case reports, case series, cohort studies, cross-sectional studies) and (ii) published in English. Editorials, commentaries, viewpoints, and letters to editors were excluded.

Quality assessment and risk of bias

We used the Joanna Briggs Institute (JBI) tools to assess the risk of bias in the included papers based on the different designs: cross-sectional, case series, cohort, and qualitative [29]. For prevalence and incidence studies, we applied the JBI Checklist, which uses a four-point scale (“no,” “yes,” “unclear,” or “not applicable”) to evaluate various aspects of the study. Each “yes” answer scored one point, with a maximum of 10 points. For other study types: analytical cross-sectional studies (maximum score of 8 points), cohort studies (11 points), qualitative studies (10 points), and case series (10 points) (see Supplementary file 1). For mixed-method studies, we used the Quality Assessment with Diverse Studies (QuADS) tool [30].

Data management and extraction

All retrieved articles were imported into Mendeley, and duplicates were removed. In a two-round screening process, eligible articles were shortlisted and screened by two independent reviewers. The final articles agreed upon by both reviewers were included.

The research team created a *Google Form* data extraction form to collect data from the included studies (available at this link: <https://forms.gle/qaCLBFzU3ed4gty79>). To standardize and validate data extraction, the research team developed and updated a standardized data extraction form to ensure consistency. Reviewers were trained on using this form, which was pilot-tested on a few studies to identify any issues. Each article was reviewed by

two independent reviewers to minimize bias and errors. The extracted data were then compared, and any discrepancies were resolved through consensus or by involving a third reviewer (MMK) if necessary. Periodic quality checks were conducted to ensure the accuracy and completeness of the data. These steps ensured that the data extraction process was systematic, consistent, and reliable.

The following information was captured: (i) characteristics of the article (title, first author, year of publication, year of data collection, type of study, and peer review status), (ii) characteristics of the victims (age, gender, level of education, presence of mental illness, presence of a physical illness, relationship to the perpetrator, number of siblings, orphanhood status, nationality, reported socioeconomic status, marital status, situation that lead to murder, multiple perpetrators, contact with psychiatrist, religious beliefs, location), and (iii) characteristic of the perpetrator (age, gender, marital status, socioeconomic status, reason of crime, context of incident, mental illness history, physical illness status, relationship with victim, number of children, history of abuse, forensic history, history of substance abuse, religion, tribe, previous history of filicide, weapon/instrument used in the murder, where the murder took place, more than one victim, family history of mental illness, perpetrator sentence, past contact with psychiatrist, religious believe, cultural back ground).

Results

Search results

A total of 107 studies were identified from various databases; 26 were duplicates, and 59 were considered for full review. Among the thoroughly reviewed articles, only 15 were included in the current review. These 15 papers, capturing filicide as a phenomenon from 19 African countries between 1967 and 2019, had a cumulative sample of 2,201 individuals. They were all published in the past 20 years. Most of the studies were conducted in South Africa ($n=6$), followed by Ghana ($n=3$). The included studies comprised five retrospective cohort studies, four cross-sectional studies, three qualitative studies, two mixed-method studies, and one case series (Table 1).

Quality and risk of bias of the included studies

The included studies had good quality scores based on various assessment tools. The included studies generally scored well on the JBI for prevalence and qualitative studies. However, some cross-sectional studies had small sample sizes ($n=2$). All the analytical cross-sectional studies ($n=3$) lacked identification of confounding factors [31–33]. Retrospective cohort studies also didn’t address confounding factors adequately. In Mixed

Table 1 Study characteristics

First Author	Country	Sample Size	year of Data Collection	Study design	Total on quality assessment	Prevalence
Abraham N et al. (2016) [31]	South Africa	454	2009	Cross sectional study	9/10	
Allotey P et al. (2001) [35]	Ghana	254		Mixed methods study	6/15	
Alsaif D et al. (2013) [36]	Egypt	60	2010	Retrospective cohort study	8/11	7.97% of total death records
Baiden F et al. 2006 [33]	Ghana	59	2002	Cross Sectional Study	9/10	
Bayat M et al. 2014 [37]	Cote d'Ivoire	89	-	Qualitative study	9/10	
Denham A et al. 2020 [38]	Ghana			Qualitative Study	9/10	
Dekel B et al. (2020) [39]	South Africa	22	2015	Retrospective cohort study	8/11	
El-Hak S et al. 2009 [40]	Egypt	41	1996–2005	Retrospective cohort study	8/11	1.38% of total number of family violence deaths ($n=2967$) and 13.02% of total autopsied children ($n=315$)
Fluehr-Lobban C et al. (1976) [41]	Sudan	351	1970–1972	Cross sectional study	6/14	3.7% of total homicides
Granzberg G et al. (1973) [32]	Angola, Cameroon, Ethiopia, Gabon, Guinea, Guinea Bissau, Kenya, Somalia, South Africa, Tanzania, Uganda, and Zambia	70	1967	Cross sectional study	10/10	
Khelil M et al. (2019) [42]	Tunisia	513	2016	Retrospective cohort study	8/11	0.042% (0.42 per 100,000 live births per year)
Khoele K et al. 2016 [43]	South Africa	32	1990–210	Case Series	9/10	
Moodley S et al. (2019) [13]	South Africa	7	2019	Qualitative study	9/10	
Moseson H et al. (2019) [44]	Senegal		2017	Mixed methods study	11/15	
Toit C et al. (2018) [45]	South Africa	249	2016	Retrospective cohort study	8/11	

methods studies, the discussion of one study's explicit points is synthesized together to logically support the overarching methodological aim. The review of ethnographic literature scored well on Quality assessment for the systematic review of qualitative evidence of Hawker et al. [34]. (Supplementary file 1).

Victim characteristic

All studies reported filicide in one or more of its sub-categories: neonaticide ($n=10$), infanticide ($n=13$), and filicide in general ($n=15$). The number of victims ranged from 7 to 513, and the gender of victims was provided in 5 studies [31, 36, 42, 43, 45]. However, no study could support any significant gender bias among the victims. Four studies reported a history of mental, physical, or neurological defects and congenital defects in the victims [33, 35, 37]. One study indicated the involvement of people with albinism as victims of filicide. For details, see Table 2.

Prevalence of filicide

The prevalence rates vary across studies, with some reporting specific rates per live births, percentages of total homicides, or proportions of total deaths. A study in Tunisia reported a prevalence of 0.042% [42]. Meanwhile, a study conducted in Sudan revealed a prevalence of 3.7% concerning total homicides [41]. Investigations carried out in Egypt indicated a prevalence of 1.38% for the total number of family violence deaths and 13.02% for the total autopsied children [40]. Additionally, 7.79% of total death records [36] in Egypt were reported in another study, see Table 2.

Perpetrator characteristics

Relationships of the perpetrator with the victims include mothers, fathers, guardians, grandparents and stepparents. Mothers are the most frequently cited perpetrators, mentioned in 15 of the 16 studies, followed by fathers, reported in 7 of 15 studies. Mothers who are reported in the studies often are in the post-partum period and commit neonaticide as a common trend in the perpetrator description [13, 31, 38, 39, 41–45]. The marital statuses

Table 2 Victim characteristics

First Author,	Type of Filicide studied	Number of victims	Sex/Gender n (%)	Age of victims in years.	History of mental, physical, or neurological illness in the child.	If yes describe the disease.	Twins involved.	Albinos Involved
Abrahams N et al. 2016 [31]	Filicide	454	230 (50.6%) - male 224 (49.4%) - females	Early neonates (1–6 days) (n = 233). Late neonates (6–28 days) (n = 8) 1–11 months (n = 96) Infants (< 1 year) (n = 337) 1–4 years (n = 116) 53.2% neonates, 74.4% infants under one year, the rest under 5.				
Allotey P et al. 2001 [35]	Neonaticide	5		birth to 6 weeks.	Yes	Spirit children (physical abnormalities e.g., hydro, micro and anencephale1, talipes, spina bifida), teeth at birth, dislocated or broken limbs).	No	No
Alsaif D et al. 2013 [36]	Neonaticide, Infanticide, Filicide,	60	Males 28 Females 32	< 1 year – 27 (45) 1–6 years – 15 (25) 6–18years – 18 (30)				No
Baiden F et al. 2006 [33]	Infanticide	53						
Bayat M et al. 2014 [37]	Infanticide, Filicide				Yes	Intellectual difficulty		No
Denham A et al. 2020 [38]	Filicide				Yes	Meningitis birth defects	No	
Dekel B et al. 2020 [39]	Neonaticide, Infanticide, Filicide	20		< 1 year – 6 (30) 1–6 years – 8 (40) 6–18years – 6 (30)				
El-Hak S et al. 2009 [40]	Neonaticide, Infanticide, Filicide	41		< 3 years – 9 (22) 3–6 years 16 (39) 6–9 years – 14 (34.1) 9–12 years – 2 (4.9)	No		No	No
Fluehr-Lobban C et al. 1976 [41]	Infanticide,	14						
Granzberg G et al. 1973 [32]	Neonaticide, Infanticide, Filicide						yes	
Khelil M et al. 2019 [42]	Neonaticide, Infanticide, Filicide	513	249 (48.5%) – Males 244 (47.5%) – Females					No
Khoele K et al. 2016 [43]	Neonaticide, Infanticide, Filicide	40	24 (60%) – male 14 (35%) females 2 (5%) – not reported	0–24 h – 5 (12) 1 day-1 year – 17 (42) 2–15 years – 18 (45)		Khoele et al. 2016 [43]	Neonaticide, Infanticide, Filicide	40

Table 2 (continued)

First Author,	Type of Filicide studied	Number of victims	Sex/Gender n (%)	Age of victims in years.	History of mental, physical, or neurological illness in the child.	If yes describe the disease.	Twins involved.	Albinos Involved
Moodley S et al. 2019 [13]	Neonaticide, Infanticide, Filicide	7			No		No	No
Moseson H et al. 2019 [44]	Infanticide, Filicide							
Toit C et al. 2018 [45]	Neonaticide, Infanticide, Filicide	212	124 (49%) -Males 8 (35.3%) -Females	Mean GA – 28-weeks.	No			

of the perpetrators were mainly unspecified; however, a study in South Africa describes the perpetrators as not having stable family support during their pregnancy and birth [31]. Only three studies mentioned mental, physical or neurological illness in the perpetrators [37, 43, 44]. The mental illness comprises psychotic disorders, mood disorders, intellectual disability, and substance use disorder. See Table 3.

Mechanisms of death

Diverse mechanisms of death were identified, including blunt force trauma, including trauma to the head, as the commonest [31, 36, 40], and drowning [36, 43, 44] as the commonest. Abandonment of children leading to severe dehydration was also identified in two studies [36, 44]. See Table 4.

Laws against filicide

While most studies ($n=9$) report that few of the identified perpetrators are arrested or persecuted [13, 31, 36, 39–41, 43–45], only two studies in Tunisia [42] and Sudan [41] report laws against filicide. See Table 4.

Risk factors of filicide in Africa

Unwanted pregnancy and unwanted child

From the reviewed studies, the most frequently mentioned factors associated with filicide are unwanted pregnancies and undesired children ($n=9$). Concealed pregnancies and concealment are commonly reported when unwanted pregnancies reached full term. Abraham et al. (2016) highlighted a notably high incidence of unwanted pregnancies proceeding to term in South Africa despite the presence of liberal abortion laws and accessible contraception services, indicating a potential failure in maternal and reproductive health services [31]. The study in South Africa also showed that men may play a role in jointly deciding to abandon a newborn, with denial of paternity and lack of awareness about the pregnancy in the social environment being significant variables associated with neonaticide [31]. The first six

days of life are the period with the highest risk of child killings under the age of 5, with the risk decreasing afterward [31]. Qualitative research in Senegal uncovered two key motivations for infanticide: societal conditions where childbearing is deemed unacceptable and the inaccessibility of abortion due to its criminalization. Unacceptable conditions include children born to unmarried women whose partners denied paternity, victims of rape, and children resulting from infidelity, all associated with the fear of social and familial ostracization [44]. For details, see Table 4.

Marital dispute, Family conflict and violence

Family conflict and marital disagreements were identified in 8 out of the 15 studies, marking it as the second most prevalent factor linked to filicide in our review. Among these conflicts are instances of spouses failing to provide for their children, engaging in extramarital affairs, and having illegitimate children. A study conducted in South Africa revealed that exposure to intimate partner violence during childhood had the potential to influence individuals to perpetrate or become victims of such violence in adulthood [39]. Additionally, an association with childhood trauma, encompassing adverse parenting experiences such as abuse, neglect, and abandonment, was reported in the research conducted by Dekel (2020) [39].

Low social economic status

Three studies highlighted low socioeconomic status as a factor linked to filicide, encompassing conditions such as poverty and low social standing [39, 40, 45]. Mothers' likelihood of perpetrating filicide was correlated with economic stress, unemployment, limited education and social isolation.

Cultural norms

In seven studies, Cultural beliefs and norms are associated with filicide [32, 33, 35, 37, 38, 44]. Some repeated cultural mentions in studies were the spirit, snake and

Table 3 Perpetrator characteristics

First Author,	Country	Relationship of the perpetrator to the victim.	Age of perpetrator in years.	Sex/Gender	If female, what reproductive status/stage?	Marital Status	History of mental, physical, or neurological illness in the perpetrator.	If yes specify.
Abraham N et al. 2016 [31]	South Africa	Mother Father Stepparent	mean age – 27.7 years		Post partum	Single mothers Most mothers had no support and were concealing the pregnancy		
Allotey P et al. 2001 [35]	Ghana	Mother Grand Parents					No	
Alsaif D et al. 2013 [36]	Egypt	Father – 18 (30) Stepfather – 12 (20) Mother – 10 (17)		Female – 10 Male – 30	Married Divorced			
Bayat M et al. 2014 [37]	Cote d'Ivoire	Mother Father Grand Parents, Guardian, Community members					Yes	Intellectual disability Down syndrome Others.
Denham A et al. 2020 [38]	Ghana	Mother Father Grand Parents Guardian Clan leader			Post partum	Married, Single, Cohabiting		
Dekel B et al. 2020 [39]	South Africa	Mother – 10 Father – 5 Stepmother – 3 Stepfather – 2		20 to 53 years old.	Post partum	Married, Single Divorced Separated		
El-Hak S et al. 2009 [40]	Egypt	Child's father – 25(60.98) Step-father – 5(12.20) Grand-father – 1(2.44) Child's mother- 3(7.32) Step-mothers – 7(17.07)		Male 31 female 10		Still married – 9 (22) Separated couples – 21 (51.2) Multiple wives – 11 (26.8)	No	
Fluehr-Lobban C et al. 1976 [41]	Sudan	Mother	18–30	Female	Post partum	Not lawfully married.		
Granzberg G et al. 1973 [32]	Angola, Cameroon, Ethiopia, Gabon, Guinea, Guinea Bis-sau, Kenya, Somalia, South Africa, Tanzania, Uganda, and Zambia	Mother Father Grand Parents Guardian						
Khelil M et al. 2019 [42]	Tunisia	Mother		female, mothers were studies based on penal code.	Post partum	Married Single Divorced Separated		

Table 3 (continued)

First Author,	Country	Relationship of the perpetrator to the victim.	Age of perpetrator in years.	Sex/Gender	If female, what reproductive status/stage?	Marital Status	History of mental, physical, or neurological illness in the perpetrator.	If yes specify.
Khoele K et al. 2016 [43]	Senegal	Mother	Mean – 29.8 Range – 20–49	32 females	Post partum	Maaried/co-habiting – 15 (46) Unspecified – 17 (47)	Yes – 19 (48)	Psychotic disorder 9 (28) Mood disorder 8 (25) Substance use disorder 2 (6) Intellectual disability 2 (6) None 13 (41)
Moodley S et al. 2019 [13]	South Africa	Mother	21 to 50	Female	Post partum	Single – 2 (29) Married – 3 (42) Separated – 2 (29)	Yes, at time of offense	Psychotic disorder – 3 (42) Mood disorder – 2 (29) Mental illness related to a medical condition – 2 (29)
Moseson H et al. 2019 [44]		Mother	26–40		Post partum	Single – 2 (29) Married – 3 (42) Separated – 2 (29)	Yes (major mental disorder at time of offence)	Psychotic disorder – 3 (42) Mood disorder – 2 (29) Mental illness due to medical condition – 2 (29)
Toit C et al. 2018 [45]		Mother		Female, mostly mothers who abandoned their neonates.	Post partum			

twin children. Some studies reported unique findings, such as the high commitment between twin infanticide and conditions forcing mothers to disrupt social patterns [32].

Mental disorder and substance abuse

In four studies, mental disorders and substance use are identified as factors associated with filicide [13, 36, 39, 41, 43]. Perpetrators of filicide were reported to have mental illness, with some experiencing psychosis at the time of the crime [13]. However, a substantial number of perpetrators in various studies did not exhibit mental illness; for instance, Khoele et al. reported a high percentage (41%) of perpetrators without mental illness [43]. Additionally, childhood trauma was identified as a risk factor linked to substance use among perpetrators, suggesting that substance use may be an attempt to cope with trauma, as highlighted by Dekel (2020). See Table 4.

Crime and rape

A proportion of females between the ages of 12 to 18 who commit filicide are victims to rape [39, 44].

Other factors

Various other factors, including high birth rates, ill maternal health, including HIV, illegitimate children, infidelity, societal rejection, late antenatal care (ANC) attendance, etc., have also been identified. Individual motivations and perceptions of perpetrators, such as mothers killing children to destroy what they created and fathers doing so to break the mother's hearts [36]. See Table 4.

Recommendations suggested by researchers

(1) Prevention focus:

Prevention efforts aimed at addressing child killings must

Table 4 Risk factors

First Author,	Country	Mechanism of death	Risk factors of filicide.	Was perpetrator arrested?	Laws against filicide.	Unique findings on filicide in this study.
Abraham N et al. 2016 [31]	South Africa	Blunt force Strangulation	Concealed pregnancy 40% lower likelihood for boys to be killed in rural settings than in urban settings reflecting a lesser propensity to kill boys in more traditional areas in which a son preference is strong. Unwanted pregnancy Unwanted child	16.8% were persecuted	No special law mentioned	Most of early neonaticide perpetrators are women No difference in the rate of child homicide for children overall No gender difference in neonaticides involving abandonment Higher number of older girls (1–4 y) than older boys (1–4 year) killed in circumstances of child abuse. Girls are more likely to have sexual violence identified as part of the killing. All perpetrators of neonaticide in the first 6 days were mothers.
Allotey P et al. 2001 [35]	Ghana		Witchcraft Cultural norms Unwanted pregnancy Categorizing a child as a spirit child. Ill health of the mother Infidelity Tragic events	No		Even hospital staff do believe in spirit child and take part in the ritual to some extent of turning a blind eye and forging the reason of child death. Other spirit children who are killed include. - - The child of a mother who (1) had a very difficult pregnancy; (2) dies at birth; or (3) engages in intercourse in an open place. - a child whose birth is followed by a series of tragic events within the compound.
Alsaif D et al. 2013 [36]	Egypt	Trauma to head (24.4%) Neglect (severe dehydration) Drowning -	Family dispute Marital dispute Parental separation Substance abuse Frustration to the caregiver by infant child below one year Marital conflicts.	yes		Mothers kill their children to destroy what they created, while fathers kill them to break their mother's hearts
Baiden F et al. 2006 [33]	Ghana		Ritual killing of spirit children. Cultural norms			Infanticide is responsible for 4.9% of neonatal deaths in Kassena nankana District in northern Ghana.
Bayat M et al. 2014 [37]	Cote d'Ivoire		Snake children (children with intellectual Disabilities). Cultural belief Animism Unwanted child	No	There are now laws making the killing of snake children illegal.	Even educated people still do believe in the practice of snake children killing. Sensitized individuals do change their perspective and become more tolerant with "snake children". It is believed that snake children are possessed and will never improve or live like a person hence they should be disposed
Denham A et al. 2020 [38]	Ghana		Unwanted child Cultural believes related to spirit children	No		

Table 4 (continued)

First Author,	Country	Mechanism of death	Risk factors of filicide.	Was perpetrator arrested?	Laws against filicide.	Unique findings on filicide in this study.
Dekel B et al. 2020 [39]	South Africa		Adverse parenting experience of perpetrators Substance use Intimate relationship violence Sexual violence. Mental disorder Family dispute Marital dispute Poverty Unwanted pregnancy Unwanted child	yes		
El-Hak S et al. 2009 [40]	Egypt	-Blunt trauma (63.4%) -Burn (14.6%) -Stabbing (12.2%) -Smothering or throttling (2.4%) -Poisoning (2.4%) -Firearm injuries (2%).	Domestic violence Separated couples. Rural residence Family dispute- Marital dispute Poverty Children punishment Parent argument Financial troubles.	yes		Perpetrators are mostly male
Granzberg G et al. 1973 [32]	Angola, Cameroon, Ethiopia, Gabon, Guinea, Guinea Bis-sau, Kenya, Somalia, South Africa, Tanzania, Uganda, and Zambia		Twins Cultural norm Unwanted pregnancy Unwanted child	No		There was a highly committed relationship between twin infanticide and the presence of conditions that would force a mother to disrupt social pattern if she were to rear two children at once.
Khelil M et al. 2019 [42]	South Africa		Being born outside the hospital setting. High birth rates.	No	Penal act against filicide	Majority of the infanticide victims are born out of a hospital setting The law allowing mothers to take their children to NGO for foster care reduced rate of leaving infants on the roadside. Women who fear their families finding out about the pregnancy would give birth near a river or canal. From 2012 to 2016 the infanticide rate steadily decreased despite increase in the birth rate, suggesting an improvement with government and NGO interventions.
Khoele K et al. 2016 [43]	South Africa	Weapon 10 (25) Poisoning 8 (20) Drowning 4 (10)	Mental disorders Domestic violence Abusive childhood Financial difficulties Conflict with partner Family conflict.	Yes		A high proportion of the perpetrators have no mental illness. (41%).

Table 4 (continued)

First Author,	Country	Mechanism of death	Risk factors of filicide.	Was perpetrator arrested?	Laws against filicide.	Unique findings on filicide in this study.
Moodley S et al. 2019 [13]			Mental disorder Family dispute Marital dispute Abusive male partners Unsupportive male partner Polygamous behaviour from male partner	yes		They perceived trauma and remorse for their offenses Many experiences psychosis and voices at time of the offense
Moseson H et al. 2019 [44]		-Abandonment of infant - Suffocation - Drowning	Illegitimate child Family dispute Marital dispute Cultural norms Unwanted pregnancy Unwanted child Inaccessibility of abortion related to its criminalization. Being widowed woman that had been raped	Few were arrested		
Toit C et al. 2018 [45]			Low socio-economic status. Marital dispute Poverty HIV/AIDS infection Late ANC attendance	Some perpetrators were arrested and persecuted. Majority were not identified or arrested.	No special legislation but prosecuted under the common law crime of Murder.	

be tailored and context-specific, as emphasized by Abrahams et al [31]. They advocate for strategies that consider the various developmental stages of children. Khelil et al. [42] highlight the need to delve into the cultural, legal, and socio-economic influences on infanticide across different countries and regions. Furthermore, Moseson et al. [44] recommend conducting more research on the links between abortion, sexual and reproductive health services, and infanticide in Senegal, as well as examining the impact of social norms on women's sexuality and pregnancy.

(2) Standard protocol

The absence of a standardized protocol for medicolegal investigations concerning abandoned fetuses and stillbirths is a significant gap, as stressed by Toit et al. [45]. They suggest establishing minimum requirements and guidelines for such protocols to ensure comprehensive investigations, which would help in determining the cause of death and identifying the neonate as accurately as possible.

(3) Multifaceted approach

Addressing filicide requires a multifaceted approach, as proposed by El-Hak et al. [40] This approach includes identifying families at high risk, understanding the factors that lead to filicide, ensuring community access to

psychiatric care, intervening promptly at the first report of child abuse or filicide, and involving health administrations, especially for less educated rural populations and vulnerable families.

(4) Medical screening

Research into the mental illnesses associated with filicide is crucial, as underscored by Khoele et al. [43]. They recommend that all medical practitioners, particularly psychiatrists, mental health care workers, and obstetricians, should inquire about filicidal or homicidal thoughts during follow-up visits with mothers. Additionally, they advocate for mental health care workers to ensure that pregnant mothers or mothers with small children adhere to their treatment plans.

Discussion

This systematic review offers an in-depth examination of filicide in Africa, revealing the intricate aspects of this phenomenon and the contextual elements that impact its prevalence.

While our main goal was to assess the prevalence of filicide in Africa, a significant portion of the studies we reviewed primarily focused on specific events rather than presenting comprehensive prevalence data. Additionally, in those studies that did provide prevalence figures, there was considerable variation in the denominators used. This variability poses a challenge when attempting

to compare and synthesize prevalence information across different studies. While it is essential to document individual events for understanding specific cases, obtaining a broader perspective on prevalence is vital for gaining insights into the overall impact of filicide in Africa. We recommend the establishment of standardized definitions and methodologies for researching filicide to ensure consistency across studies. This standardization will enhance the accuracy of prevalence estimates and facilitate meaningful comparisons between diverse regions and populations. The reported prevalence of 3.7% in Sudan, concerning total homicides, highlights a substantial proportion of homicides in Africa being associated with filicide. In Egypt, the prevalence of 1.38% for the total number of deaths resulting from family violence underscores a significant connection between mortality rates and domestic violence. This finding aligns with similar results from other studies [46, 49], emphasizing the critical need to address issues related to domestic violence.

The recurring theme of unwanted pregnancies and undesired children as factors associated with filicide is comparable to findings outside Africa [14]. Additionally, the findings that marital disputes, family conflict, and violence and low socio-economic status align with findings that filicide appears to originate from frustration build-up resulting in violence [50]. The finding in this review that mental health issues among perpetrators including cognitive impairment and substance abuse are associated with filicide is congruent with findings outside Africa [51]. However, the finding in this review that many victims of filicide had either mental, physical, or neurological defects is contrary to findings outside Africa [51]. This is likely due to cultural attitudes toward individuals with mental, physical, or neurological conditions and socioeconomic factors, such as poverty and limited resources, that can impact the ability of families to cope with the challenges associated with caring for individuals with special needs [22, 52]. In addition, the ending of these children's lives may be associated with the high levels of affiliated stigma among caretakers and parents [53].

This review reveals that filicide is influenced by cultural norms and beliefs in various African cultures. These beliefs include the notions of spirit and snake children, who are seen as possessed by evil or mischievous spirits because of their physical or mental differences, such as disability, illness, or uniqueness [22]. These children are often abused or killed as a result of their birth circumstances or perceived threats to their families or communities. Some examples of these practices are the murder of albino children for witchcraft purposes in Tanzania [23], the infanticide of twin babies in Igbo culture in Nigeria [24], and the abduction and killing of children for their body parts in Uganda [23, 25, 54].

Maternal dominance of perpetrators in African studies aligns with reviews from other regions [4], yet it diverges from gender patterns observed in general homicide and suicide cases [47, 55, 56]. This is likely because paternal filicide has attracted limited research [17]. The low prevalence of mental disorders among perpetrators in African studies is contrary to findings from other studies including those on filicide and suicide [14–16, 57–59]. This is likely due a higher inclination to motivators like financial stress, or family conflict identified in this review. Moreover, this finding could be due to limited exploration of mental health issues among crime offenders in Africa likely because of unfamiliarity with the aspect [48, 60]. However, the finding in a study in South Africa [13] among maternal perpetrators with mental disorders that mothers likely have active symptoms at the time of the offence aligns with findings from literature outside Africa [14–16].

For the present study results, it is important to note that the majority of the mentioned associated factors lacked statistically significant associations, which hinders our ability to establish clear relationships and draw conclusive insights. The absence of statistical association in the existing studies underscores the need for more robust research methodologies with multivariate analytical approaches and cross-cultural comparisons to comprehensively identify and understand the factors contributing to filicide in the African context. To address this gap and enhance the depth of knowledge on filicide-associated factors, we propose that future researchers should incorporate more rigorous statistical analyses to ascertain causal relationships between potential factors and filicide. We also recommend the use of longitudinal that facilitate a more accurate assessment of causal factors and their temporal dynamics.

The finding in this review that the commonest mechanisms of death are Blunt Force Trauma and Drowning is likely due to a predominance of maternal perpetrators identified in this study and aligns with findings in China that female offenders rarely used weapons with frequent use of less violent means such as drowning or suffocation, with banging or hitting [61]. This aligns with the predominant methods of trauma in suicides, which often involve hanging and jumping from heights [62]. However, it contrasts with homicides, where firearms are typically the most common method, followed by sharp instruments like knives [63–65]. This finding diverges from South Asia, where filicide is most commonly perpetrated using poisonous substances or burning by parents [57]. This is likely due to socio-cultural differences in the settings.

The literature has revealed a close link between filicide, suicide, and homicide, with numerous potential risk factors for filicide identified as being similar to those of suicide and homicide. These factors are intertwined with

broader discussions on suicidal behaviours and homicide, reflecting shared underlying dynamics, especially among populations struggling with poverty, lower levels of education, and marked mental health disorders [66, 67]. Despite this established connection, our study did not find any instances of filicide-suicide or explore literature regarding this aspect. Future research should delve into this area to better understand the link within this unique population.

The limited reporting of laws against filicide and arrest and persecution of few of identified perpetrators in African studies is concerning. We recommend policy makers to revise country laws to ensure better protection of children within the continent. Also, researchers to explore the available laws and provide insight into better approaches to handle the issue legally.

Studying and intervening in cases of filicide, especially within culturally sensitive contexts, poses significant ethical challenges that require careful handling [68]. Researchers and interveners must approach these contexts with cultural sensitivity and respect, acknowledging the profound influence of local beliefs, norms, and practices related to filicide. This involves understanding diverse perspectives on family dynamics, child-rearing practices, and attitudes towards mental health, while avoiding imposing Western frameworks that could misinterpret or undermine local practices [68, 69]. Obtaining informed consent is crucial, particularly in sensitive research, ensuring participants understand the study's purpose, risks, and benefits fully. Privacy and confidentiality must be strictly maintained due to the sensitive nature of the subject matter. Efforts should prioritize minimizing harm and reducing stigma for individuals and communities affected by filicide, refraining from sensationalized reporting that could perpetuate negative perceptions or harm survivors. Culturally competent interventions are essential, requiring collaboration with community leaders, healthcare providers, and policymakers to develop strategies that respect and align with local cultural norms [70]. Ethical dilemmas arise in balancing individual autonomy with protective measures for potential victims, necessitating careful navigation to uphold the rights and agency of individuals while safeguarding vulnerable families [70]. Furthermore, ensuring the long-term impact and sustainability of interventions involves integrating support and prevention strategies into local systems to promote community well-being and resilience effectively. In summary, addressing filicide ethically in culturally sensitive contexts demands a nuanced approach that values cultural diversity, prioritizes informed consent and privacy, avoids harm and stigma, demonstrates cultural competence in interventions, and ensures sustainable efforts that support affected communities comprehensively.

Strength and limitations

One of the key strengths of a review on filicide in Africa is its thorough integration of various studies throughout the continent, providing a detailed comprehension of this intricate issue. The review's credibility is bolstered by meticulous quality assessment techniques, ensuring the accuracy and validity of its conclusions. Majority of the studies scored highly on quality assessment. Furthermore, comparisons with global literature enrich its impact by contributing valuable insights into discussions on violence, mental health, and family dynamics. However, this systematic review is constrained by several limitations. The majority of the literature consists of studies with small sample sizes and various methodological shortcomings, increasing the risk of bias. Additionally, a significant portion of the reviewed studies originates from South Africa, indicating a potential bias in the existing literature. The limited scope of research in this area within the region further complicates matters, and the presented results exhibit substantial heterogeneity, precluding the feasibility of conducting a meta-analysis.

Gaps in literature and key recommendations

Research on filicide in Africa highlights several significant gaps: a lack of comprehensive data and reliable statistics on its prevalence, insufficient examination of cultural, social, and economic factors unique to African contexts, a shortage of studies on the psychological profiles and mental health issues of perpetrators, limited analysis of legal systems and policies addressing filicide, few comparative studies with other regions to identify common and unique factors, and a lack of historical perspective on filicide trends and attitudes in Africa.

Key recommendations for future research and policy include developing comprehensive data collection methods and conducting large-scale epidemiological studies, investigating specific cultural, social, and economic determinants to tailor interventions, conducting in-depth studies on the mental health of perpetrators and integrating mental health services into prevention strategies, enhancing legal and policy frameworks to effectively address and prevent filicide with proper enforcement and monitoring, promoting comparative and longitudinal research to understand temporal trends and regional differences, and implementing community-based awareness and educational programs to identify risk factors and prevent filicide.

Conclusion

In conclusion, the review found that filicide is a complex and multifaceted issue that is affected by various individual, familial, and societal factors. The review also identified several gaps and challenges in the existing literature, such as the lack of comprehensive prevalence data, the

inconsistency in definitions and methods, and the limited attention to paternal filicide and mental health issues. The review highlighted the need for more standardized and rigorous research on filicide in Africa, as well as more culturally sensitive and evidence-based interventions to prevent and address this problem. The review also suggested some directions for future research, such as exploring the long-term consequences of filicide for survivors and communities, examining the role of gender and power dynamics in filicide, and evaluating the effectiveness of existing policies and programs to combat filicide. By synthesizing the available evidence and providing a comprehensive overview of filicide in Africa, this review contributes to the advancement of knowledge and practice in this field.

Supplementary Information

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Supplementary Material 1

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J.M.S, J.A, and MMK. wrote the main manuscript text. All authors reviewed the manuscript."

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