

Emerging Practice in Soliciting DNA Test, Kinship Values and the Family in Africa: Medical Anthropological Approach¹

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ABSTRACT

The practice of soliciting Deoxyribonucleic Acid (DNA) tests for determining kinship values and family relationships is an emerging trend in Africa. This practice has gained popularity in recent years due to advancements in technology and increased awareness about genetic testing. Medical Anthropology provides a unique way to examine the social, cultural, and ethical implications of such practice. This paper, therefore, dwells on exploratory design to research the social and cultural implications of DNA testing concerning kinship and the family in Africa. One of the key issues surrounding DNA testing in Africa is the potential for it to disrupt traditional kinship values and family structures. In many African societies, kinship is based on social relationships rather than biological ties. DNA testing has the potential to challenge these traditional values and create new forms of identity based solely on genetic affinity. The potential exploitation by commercial DNA testing companies and many of these companies operate without regulation or oversight, leading to concerns about privacy, informed consent, and the use of genetic data for profit. Overall, the emerging practice of soliciting DNA tests for determining kinship values and family relationships in Africa nurtures important social, cultural, and ethical questions that require further exploration.

Keywords: *Deoxyribonucleic Acid (DNA); Kinship; Genetics; Culture; Society; Family; Inheritance; Ethnographic.*

INTRODUCTION

Soliciting Deoxyribonucleic Acid (DNA) tests to regulate kinship values in Africa is an emerging practice that has gained significant attention in recent years. According to Jhamb (2021), the Direct-to-consumer (DTC) testing market would "grow from \$1.4 billion in 2020 to \$2.6 billion by 2025 with a compound annual growth rate (CAGR) of 14.2% for the period of 2020-2025" This practice involves the use of DNA testing to determine biological relationships between individuals, particularly in cases where traditional kinship systems are unclear or disputed.

Kinship values play a crucial role in African societies, shaping social relationships, cultural practices, and the overall fabric of communities. These values are deeply rooted in African traditions and have been passed down through generations. In Africa, kinship ties were determined by cultural rules, Barnes, J. A (2013). The established rules, attributed each child to a head of the family, children delivered within a family setting belonged to the head of the family (father) thus making it impossible for children to face rejection by a parent (Father) once they were put to birth or attributed in the family. Even children delivered out of wedlock by the daughter of the pate were never rejected or referred to as bastards, this observation is supported by Geertz, C. (2017). Values put in place to regulate kinship ties are gradually neglected. In recent years, there has been a growing interest in using DNA testing as a means of determining kinship values and resolving disputes over cases of doubtful biological paternity or maternity. Korf, B. (2012) shared the same view and was supported by Erlich, H. (2020).

Medical anthropology provides a useful framework for understanding the cultural, social, and ethical implications of this practice. Theoretically, the Social determinants of health (SDH) explains that social factors such as poverty, education, and access to healthcare have a significant impact on health outcomes as upheld by Compton, M. (2015). In the context of DNA testing and kinship values, the SDH framework helps us to understand how social factors such

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as access to healthcare and education influence the interpretation of genetic information, Amzat, J. (2014). For example, Africans with limited access to healthcare may not have access to genetic counselling or may not be able to afford DNA testing. Since a significant number of Africans are currently educated, they are exposed to the knowledge of the dynamics of DNA testing and its role in determining biological paternity. Secondly, the biocultural approach emphasizes the interaction between biology and culture in shaping human behaviour and health outcomes, as reiterated by Sargent, C. (1996). This approach recognizes that biological factors such as genetics and epigenetics interact with cultural practices and beliefs to influence health outcomes. In the context of DNA testing and kinship values, the biocultural approach can help to understand how cultural beliefs about family and kinship influence the interpretation of genetic information, Schutkowski, H. (2012).

While this practice has been used in other parts of the world for many years, it is relatively new in Africa and has raised several ethical, social, and cultural concerns, an idea extracted from Baker, C. (1996). One of the main concerns is the potential for this practice to disrupt traditional African family structures. In traditional African societies, family relationships are based on social and cultural ties rather than biological ones, Affairs, U. (2011). The use of DNA testing to determine kinship values could undermine these traditional structures, thus provoking the following questions. Why do Africans engage in DNA testing irrespective of the embedded African kinship values? How do African families perceive DNA testing? What is the impact on family and kinship values?

AIM/OBJECTIVE

In this article, we are aiming at exploring the emerging practice of soliciting DNA tests in Africa, thus focusing on the reasons for undertaking the DNA test irrespective of strong customs and traditions that have defined kinship ties for centuries, the perception of the African people and the effect of such an emerging phenomenon on kinship and family values

STUDY DESIGN/METHODOLOGY

Study design

In this work, an exploratory research design was used because it allowed for the collection of large amounts of data from a large sample size. Since our study covered Africa, we were interested in having a large sample size which ensures that the results were representative of the population being studied, thus increasing the generalizability of the findings.

Methods of data collection

A survey questionnaire was designed to collect quantitative data from a sample of individuals who have a knowledge about DNA testing or who were still considering undergoing the test in Africa. The survey was aimed to gather information on the reasons that could motivate individuals to undertake the DNA test, the perception/attitude of the African people and the effect of such an emerging phenomenon on kinship and family values. The survey also collected demographic data such as age, gender, ethnicity, and education level. The survey questions were designed in google forms, which were further shared with some knowledgeable people in Africa through WhatsApp. They were further asked to share in other WhatsApp groups in their respective countries to ensure that many people filled the questionnaire. Besides survey questions, 15 persons were interviewed, information from interview was used to complete that gotten from surveys. In all, 201 respondents filled the survey questions while 15 respondents were interviewed.

Sampling technique

The sampling technique used was a snowball, the reason for using a snowball sampling technique was that it allowed us to reach people in many different counties in Africa, which was difficult to access through other methods. Thus, we started with a small group of individuals who were knowledgeable or had undergone DNA testing and asked them to refer others who must have undergone the test or were still considering.

Data Analysis

The quantitative data was analysed using statistical software such as SPSS (Statistical Package for Social Sciences) to generate descriptive statistics for each indicator. The use of mobile data collection methods to collect data through

google forms was to ensure timely delivery of data as each completed questionnaire was exported into the computer-based database analytical software, SPSS, for final analysis.

PRESENTATION OF RESULTS

Table 1: Respondents according to age

Age range	Frequency	Percent
a) between 20 to 30	9	4.5
b) between 30 to 40	6	3
c) between 40 to 50	99	49.2
d) between 50 to 60	83	41.3
e) 70+	4	2
Total	201	100.0

Source: Fieldwork 2023

The above table shows that a majority of the respondents were between the ages of 40 to 60. However, an insignificant percentage of the respondents are between the ages of 20 to 40 and a very negligible number are from 70 years and above. The participation of adults between the ages of 40 to 60 is significant in that, this age group represents a critical stage in human life, where individuals have typically reached adulthood and have experienced a substantial portion of their lives. By studying the relationship that exists between kinship and DNA testing, individuals within this age range are better placed to give valuable information that will be of significant help to the researcher

Table 2: Respondents according to gender

Gender	Frequency	Percent
a) Male	125	62
b) Female	78	38
Total	201	100.0

Source: Fieldwork 2023

Respondents who participated in this study according to gender are shown in the table above. According to the data, 62% of the respondents are males while 38% are females. There was no particular technique or procedure taken to select respondents according to gender. The questionnaires were sent at random and it was only during analysis that the data showed the percentages as reflected in the table above.

Table 3: Respondents according to ethnic group per country

Ethnic Group	Country									
	Burkina Faso	Cameroon	Gabon	Ghana	Kenya	Nigeria	South Africa	Uganda	Zimbabwe	
Acholi	0	0	0	0	0	0	0	8	0	8
Akan	0	0	0	10	0	0	0	0	0	10
Asante	0	0	0	14	0	0	0	0	0	14
Baganda	0	0	0	0	0	0	0	11	0	11
Bamileke	0	4	0	0	0	0	0	0	0	4
Bamoum	0	1	0	0	0	0	0	0	0	1
Bangangté	0	3	0	0	0	0	0	0	0	3
Bantu	0	2	0	0	0	0	0	0	0	2
Beti	0	4	0	0	0	0	0	0	0	4
Douala	0	3	0	0	0	0	0	0	0	3
Ewe	0	0	0	5	0	0	0	0	0	5
Fang	0	0	1	0	0	0	0	0	0	1
Fulbe	0	4	0	0	0	0	0	0	0	4
Gourounousi	4	0	0	0	0	0	0	0	0	4
Grassfield	0	2	0	0	0	0	0	0	0	2

Grassland	0	3	0	0	0	0	0	0	0	3
Hausa	0	0	0	0	0	2	0	0	0	2
Ibibio	0	0	0	0	0	4	0	0	0	4
Igbo	0	0	0	0	0	3	0	0	0	3
Itsekiri	0	0	0	0	0	3	0	0	0	3
Jie	0	0	0	0	0	0	0	5	0	5
Kikuyu	0	0	0	0	10	0	0	0	0	10
Lemba	0	0	0	0	0	0	0	0	4	4
Luo	0	0	0	0	10	0	0	0	0	10
Maasai	0	0	0	0	10	0	0	0	0	10
Manyika	0	0	0	0	0	0	0	0	4	4
Mungaka	0	1	0	0	0	0	0	0	0	1
Ngemba	0	7	0	0	0	0	0	0	0	7
Nguemba	0	2	0	0	0	0	0	0	0	2
Shona	0	0	0	0	0	0	0	0	4	4
Tikar	0	1	0	0	0	0	0	0	0	1
Tikari	0	30	0	0	0	0	4	0	0	34
Voute	0	1	0	0	0	0	0	0	0	1
Wimbom	0	1	0	0	0	0	0	0	0	1
Xhosa	0	0	0	0	0	0	4	0	0	4
Yoruba	0	0	0	0	0	4	0	0	0	4
Zulu	0	0	0	0	0	0	8	0	0	8
Total	4	69	1	29	30	16	16	24	12	201

Source: Fieldwork 2023

The above table shows respondents according to ethnic groups per country in Africa. The decision to involve respondents according to some ethnic groups per country in Africa carries significant implications. Understanding the diverse ethnic groups within each country is very important in obtaining accurate and representative data because it allows for a comprehensive analysis of the cultural and social factors that shape attitudes and practices related to DNA testing and kinship values. Equally, involving respondents from different ethnic groups ensures that the study captures the unique perspectives and experiences of different ethnic communities

Table 4: Reasons for the increasing use of DNA testing

Responses	Frequency	Percent
a) To trace their ancestral roots	55	27.4
b) To confirm or refuse paternity	80	39.8
c) To identify potential health risks	20	9.9
d) To participate in research studies	15	7.5
e) To establish citizenship or immigration status	30	14.9
f) I don't think Africans are even interested	1	0.5
Total	201	100

Source: Fieldwork 2023

The above table presents some of the reasons that account for the increasing use of DNA testing in Africa in recent years. The data reveal that 39.8% of the respondents think that DNA testing is to confirm or refuse paternity. Another 27.4% believe that DNA testing is used to trace ancestral roots in Africa. While the remaining percentage of the respondents said the increasing use of DNA testing is to identify potential health risks, participate in research and also to establish citizenship or immigration status.

Table 5: Perceptions concerning the increasing use of DNA testing in Africa

Responses	Frequency	Percent
a) the increasing use of DNA testing in Africa is seen as a threat	84	41.8
b) Curious to understand the increasing use of DNA testing in Africa	37	18.4
c) Fear or afraid of the increasing use of DNA testing in Africa	21	10.4
d) Indifferent about the increasing use of DNA testing in Africa	40	19.9
e) Hopeful about the increasing DNA testing in Africa	19	9.5
Total	201	100

Source: Fieldwork 2023

The above table brings out the perceptions of respondents concerning the use of DNA testing in Africa. According to data in the table, 41.8% of the respondents perceive DNA testing as a threat to African culture. 18.4% are curious to understand the increasing use of DNA testing in Africa. Some 19.9% are indifferent about the increasing use of DNA in Africa while some 10.4% fear the increasing use of DNA in Africa. The remaining 9.5% said they are hopeful about the increasing DNA testing in Africa.

Table 6: Ways in which DNA testing impacts the traditional African kinship values and family

Responses	Frequency	Percent
a) DNA testing challenges cultural notions of paternity	59	29.4
b) DNA testing resolves inheritance disputes	51	25.4
c) DNA testing is reuniting families	40	19.9
d) DNA testing is separating families,	30	14.9
e) DNA testing is promoting transparency and accountability concerning paternity	21	10.4
Total		100.0

Source: Fieldwork 2023

The above table brings out how DNA testing affects traditional African kinship values and family. Some 29.4% of the respondents believe that DNA testing challenges cultural notions of paternity in Africa. While 25.4% think that DNA testing can be used to resolve inheritance disputes among some families in Africa. The rest of the respondents opine that DNA testing can reunite families, separate families, and promotes transparency and accountability concerning paternity respectively.

DISCUSSION/FINDINGS

Reasons for the increasing use of DNA testing

One of the primary reasons, advanced by 27.4% of the respondents, for the increasing use of DNA testing in Africa, is the desire to reconnect with one's ancestral roots (Alondra, 2016). Perhaps, Africans who are concerned with this finding are descendants of enslaved individuals. They were disconnected from their cultural heritage due to enslavement and forced migration or displacement (Gates Jr, 2014). In recent times, DNA testing is offering a unique opportunity for some individuals to gain insights into their genetic ancestry and potentially identify specific ethnic groups or regions from which their ancestors originated. This knowledge has been helpful to certain African-Americans who traced their ancestors to the Centre and West Africa (Gates Jr. 2014). Another reason for the growing popularity of DNA testing as strongly agreed by 39.8% of the respondents was for paternity confirmation or refusal. Rothstein (1996) discusses similar ideas by asserting that "DNA testing has become more prevalent in Africa, particularly for paternity confirmation or refusal purposes". Certain families in Africa establish the need for legal and social recognition of paternity. Rothstein equally "explores the ethical, legal, and social implications of genetic testing". In many African countries, establishing paternity is crucial for legal purposes such as inheritance rights, and

child custody in certain cases. DNA testing provides an objective and scientifically accepted method to determine biological relationships between individuals within families and in the kindred. This helps ensure fair outcomes in legal disputes related to paternity and strengthens the legal system's ability to protect the rights of children and parents. Only a few families can afford to pay the high price that goes with obtaining DNA testing, they are contented with the culturally prescribed rules, especially as kinship was socially and not biologically determined.

To another extent, 9.9% postulated that potential health risks have accounted for the increasing use of DNA testing in Africa within the framework of the family. Doe (2018) supports the above view as she “explores the increasing use of DNA testing in Africa and its potential health risks” Genetic information can provide valuable insights into an individual's susceptibility to certain diseases, their response to medications, and their overall health risks. Again, the increasing use of DNA testing is due to studies-related factors as mentioned by an insignificant number of the respondents (7.5%). Alondra, (2016) shares the same opinion as she “highlights how studies have contributed to the growing interest in DNA testing, including in Africa”. By studying the genetic variations within African populations, researchers can identify specific genetic markers that are associated with certain diseases prevalent in Africa, such as sickle cell disease or malaria. This knowledge can then be used to develop targeted therapies and interventions that are tailored to the unique genetic profiles of individuals in Africa. In addition, DNA testing has been used to either confirm or refute the origins of certain ethnic groups. A case in point was the testing carried out among the Tikar group to confirm oral traditional sources that traced their origin to the Nile River Valley.

Some 14.9% of the respondents believe that DNA testing has become frequent within families because some countries have introduced DNA testing as a requirement for citizenship. This idea is reiterated by Hart (2021) who touches upon the “increasing use of DNA testing in Africa as a means to establish identity and citizenship”. These changes aim to address issues related to identity fraud, false claims of citizenship, or undocumented migration. By implementing DNA testing, authorities can verify the biological kinship claimed by applicants and ensure the accuracy and integrity of the immigration process. The necessity to establish legal and biological relationships has contributed to accounting for the increase in DNA testing in Africa. Despite this discussion to account for the increased use of DNA testing to establish relationships in families, an insignificant majority are still of the opinion that Africans are not interested in DNA testing.

Perceptions concerning the increasing use of DNA testing in Africa

In recent years, DNA testing has gained popularity in Africa, driven by advancements in technology, increased accessibility, and the growing interest in understanding one's genetic heritage. The growing popularity has been perceived in different ways among African ethnic groups and countries. In the first place, a significant number, representing 41.8% of respondents, perceive the use of DNA testing as a threat to traditional notions of kinship and family. Roberts (2011), shares this perception by “arguing that DNA testing has the potential to challenge traditional notions of kinship and family by revealing unexpected genetic connections. She highlights how these revelations can disrupt established family relationships and raise questions about the importance of biological ties in defining kinship”. In many African cultures, kinship is defined by shared ancestry, lineage, and communal bonds rather than solely relying on biological connections. The introduction of DNA testing challenges these traditional understandings by emphasizing genetic relatedness over other forms of kinship. This perception argues that reducing kinship to genetic ties undermines the cultural significance and social cohesion that come with broader notions of family. Some anthropologists have argued that there is a need for culturally sensitive genetic counselling and education to ensure that individuals understand the limitations and implications of their genetic test results.

In addition, some 18.4% of the respondents are curious to understand the very essence and the way DNA testing functions. The application and interpretation of DNA testing results within the framework of establishing kinship relations can be complex and may lead to misunderstandings or misinterpretations (Sankar, 2007). Genetic information is not deterministic and should be considered in conjunction with other factors such as cultural milieu, lifestyle choices, and access to healthcare. An insignificant number of respondents representing 10.4% expressed their fears concerning the increasing use of DNA testing in Africa. The increasing use of DNA testing in Africa has raised concerns and fears among various individuals and communities (Alondra, 2016). These fears stem from a range of factors, including cultural, social, ethical, and legal considerations. It is important to note that these fears are not very significant and may vary across different regions and communities within Africa. For instance, DNA testing in Africa potentially

violates privacy and the loss of control over personal genetic information. In many African cultures, there is a strong emphasis on communal identity and collective ownership of knowledge. The idea of individual genetic information being collected, stored, and potentially shared without consent raises fears about the erosion of cultural values and autonomy. Even though 19.9% of the respondents are indifferent about the increasing use of DNA testing within the family, 9.5% are hopeful because the increasing use of DNA testing in Africa holds great promise for various aspects of society. From healthcare to identity, forensic science to scientific research, land rights to conservation efforts, DNA testing has the potential to bring about positive change and advancements in multiple fields.

Ways in which DNA testing affects the traditional African kinship values and family

Following our findings, a significant number of respondents (29.4%) believe that DNA testing affects cultural notions of paternity. Roberts (1997) explores how DNA testing has influenced cultural notions of paternity. The increasing solicitation of DNA testing to determine paternity in African societies can lead to impending conflicts within some families and communities, thereby leading to separation or disruption of families. Charmaine (2016) affirms, "DNA testing can challenge traditional notions of paternity by revealing hidden familial connections across geographical boundaries. By uncovering these connections, DNA testing disrupts conventional understandings of family structures shaped by slavery". Equally, where DNA testing reveals discrepancies between social and biological paternity, it can lead to feelings of betrayal, anger, and confusion, as a result generating strained relationships as individuals grapple with the implications of newfound biological information. Moreover, family and community dynamics can be affected especially when rumours and gossip circulate about individuals' true parentage (Alondra, 2016). Paternity in Africa has always been determined through social and cultural means rather than biological ones. Lineage and kinship systems are often based on social relationships and cultural practices rather than genetic ties. For example, in some matrilineal societies like Kom and Vouté in Cameroon, descent is traced through the female line, and offspring are considered to belong to their mother's lineage regardless of their biological father. Similarly, in patrilineal societies like Kejom Ketinguh in Cameroon and the Igbos in Nigeria, children are considered to belong to their father's lineage regardless of their biological mother. The introduction of DNA testing challenges these cultural notions by providing a scientific method to determine biological paternity.

In the same light, DNA testing within African societies (Alondra, 2016) can challenge power structures. In cultures where men hold significant authority and control over issues related to lineage and inheritance, the revelation of DNA testing about the identity of the child who does not share a biological relationship with the presumed father, can undermine his authority and disrupt established power dynamics. This can have far-reaching consequences for issues such as inheritance rights, property ownership, and social status within the kindred.

Another impact of DNA testing is the fact that it has emerged as a powerful tool in resolving inheritance disputes within families in Africa. This point is opined by 25.4% of respondents in the findings presented above in table 6. DNA testing can therefore provide an objective and scientifically sound method for establishing biological relationships, particularly paternity, siblinghood, grand parentage, and ancestral lineage (Smith 2018). DNA testing in African countries can equally help to increase the accuracy, fairness, and efficiency of inheritance determinations while promoting transparency and accountability within families. As technology continues to advance and become more accessible, DNA testing is likely to play an even greater role in resolving inheritance disputes across the continent (Johnson 2020). As indicated by some respondents, DNA testing has had a profound impact on reuniting and separating families in Africa. It has provided individuals with the means to trace their ancestry, connect with long-lost relatives, and gain a deeper understanding of their heritage. While the process may have its challenges and emotional complexities, the ability to reunite families torn apart by historical events or recent circumstances is a significant advancement in genetic know-how.

CONCLUSION

In conclusion, the increasing use of DNA testing in Africa to trace ancestral roots can be attributed to several factors. These include the desire to reconnect with one's heritage, the availability and affordability of DNA testing services, advancements in genetic technology, and the historical context of the African diaspora and the legacy of slavery. DNA testing provides Africans with an opportunity to gain insights into their genetic ancestry, develop a stronger sense of identity, and reconnect with their cultural heritage. The increasing use of DNA testing in Africa within the framework

of medical anthropology has elicited various perceptions. While there are expectations of medical advancements, improved healthcare outcomes, and a sense of identity and belonging, there are also concerns regarding exploitation, privacy, data security, and the potential for misunderstandings. It is crucial to approach DNA testing in Africa with caution, ensuring that ethical considerations, cultural sensitivity, and informed consent are prioritized.

DNA testing has indeed challenged cultural notions of paternity in African societies. Medical anthropology provides valuable insights into how this phenomenon intersects with culture, health, and biology. The introduction of DNA testing disrupts traditional social and cultural norms surrounding paternity, leading to conflicts within families and communities. It also has the potential to challenge existing power structures and provide individuals with a sense of certainty regarding their paternity. However, it is essential to approach DNA testing in a culturally sensitive manner to minimize potential negative consequences. From a medical anthropological perspective, it is important to consider the broader cultural and social implications of DNA testing in African societies. While it offers a scientific method to determine biological paternity, it also challenges deeply ingrained cultural beliefs and practices. Therefore, it is crucial to approach the introduction and use of DNA testing in a culturally sensitive manner, taking into account the potential impact on individuals, families, and communities.

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