Immediate reactions of newly-diagnosed HIV-positive persons to the initial news of being HIV-positive: Implications for public health

Adobea Yaa Owusu (✉ ayowusu@ug.edu.gh)

Institute of Statistical, Social and Economic Research

Research article

Keywords: Comorbidities, Ghana, HIV/AIDS, depression, psychosocial outcomes, qualitative research, first reactions to HIV-positive diagnosis, theory of hopelessness

Posted Date: July 22nd, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-39453/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Abstract

Background: Ready acceptance of the first news of HIV-positive diagnosis is a known personal and public health safety-net. Its beneficial effects include prompt commencement and sustenance of HIV-positive treatment and care, better management of transmission risk, and disclosure of the HIV-positive status to significant others. Yet, no known study has explored this topic in Ghana; despite Ghana's generalised HIV/AIDS infection rate. Existing studies have illuminated the effects of such reactions on affected significant others; not the infected.

Methods: This paper studied qualitatively the initial reactions of 26 persons living with HIV/AIDS upon receiving the initial news of their diagnosis. Sample selection was combined purposive and random, from two hospitals in a district in Ghana heavily affected by HIV/AIDS. The paper applied the theory of hopelessness.

Results: As expected, the vast majority of respondents reacted to the initial announcement of their HIV-positive infection with a myriad of negative psychosocial reactions, including thoughts of committing suicide. A few, however, received the news with resignation. For the vast majority of respondents, having comorbidities from AIDS prior to the diagnosis primarily shaped their initial reactions to it. This was followed by having/having had an HIV-positive spouse/partner, and exposure to health education on HIV/AIDS on TV particularly. Receiving counselling from healthcare workers mostly facilitated their transitioning to self-acceptance of their HIV-positive status.

Conclusions: Although the first news of an HIV-positive diagnosis was immobilising to most respondents, the trauma faded, paving the way for beneficial public health actions. The findings do not wholly support earlier propositions of the theory of hopelessness. Rather, results indicate that both internal and external insecurities can trigger hopelessness in persons living with HIV/AIDS. The results imply the critical need for continuous education on HIV/AIDS by public health advocates, using mass media, particularly, TV. This should continuously emphasise the need for voluntary counseling and testing and the fact that once infected, prevention of further transmission, and immediate seeking and adhering to healthcare are important. These can prevent comorbidities and death from HIV infection. Healthcare workers in VCTs should empathise with persons who are informed of their HIV-positive status for the first time.

Background

News of a newly-diagnosed HIV-positive status has the tendency to lead to negative psychosocial outcomes for persons living with HIV/AIDS (PLWHAs) [1, 2, 3]. Humans depict cognitive, emotional, and motivational deficits on hearing bad news and experiencing what is deemed uncontrollable events [4 p. 347]. This is very likely to apply to PLWHAs particularly, when confronted with the news of being HIV-positive for the first time. Particularly, PLWHAs are known to mostly experience neurocognitive disorders associated with the infection [5], and often experience common mental disorders [6, 7]. This is especially the case when PLWHAs fairly expect or self-perceive negative social reaction such as spousal abuse, dismissal from employment, stigma and discrimination, among others [8]. Peterson and Seligman [4, p. 347] christened these series of responses on such occasions as "learned helplessness phenomenon."

There are numerous news reports of persons who have committed suicide shortly after an HIV-positive diagnosis. This includes even the case of a female physician from the Eket local government area of Akwa Ibom, Nigeria [9]. Previous researchers note that after the initial diagnosis of a disease believed to be life-threatening, and

particularly incurable, patients are known to experience an immediate descent into several distressing psychological and emotional states of mind [1, 2, 10]. These range from disbelief to denial to being utterly scared and shocked. Some even think that their life is not worth living anymore and imagine that indeed, the disease has already taken a final toll on them [2, 3].

This brings to the fore the need to study the reactions of PLWHAs right after their initial diagnosis. Research and programme interventions on adaptation to a new HIV diagnosis provide personal and public health safety-net and are thus needed [2, 11]. These are particularly important among females [2, 11]. Such research and interventions are helpful in educating the newly-diagnosed PLWHAs on HIV [1, 10] and promoting their health [1, 8, 12].

Acceptance of the news of an HIV-positive diagnosis is critical for several reasons [2]. Engagement in and sustenance of HIV treatment and care [1, 2], viral load (VL), CD4 counts [2, 13], and transmission risk [2, 11, 14] are affected by the reaction to the news of diagnosis. Reactions also affect perceptions of stigma and disclosure activity [2, 11]. Conversely, difficulties with accepting diagnosed HIV-positive status has serious potential negative consequences for individuals and the general public [15, 16].

Based on previous related literature, this paper primarily examines qualitatively the immediate reactions of 26 Ghanaian PLWHAs to the first news of their HIV-positive status. Second, it attempts to untangle the situations surrounding these immediate reactions to determine what might have influenced such reactions. Third, the paper delineates the processes that particularly help PLWHAs transition from negative psychological reactions to showing positive reactions and seeking HIV treatment. Fourth, thereby, this paper adds to the core literature on managing the first reactions to an HIV-positive diagnosis and the infection thereafter, and illuminates their importance to public health.

Given the known potential trauma such moments unleash on PLWHAs, knowing the first responses of PLWHAs to their newly-diagnosed infection will help sensitise HIV/AIDS counsellors and healthcare workers who relay results from the first HIV-positive test to clients, to reveal such information more strategically. Hopefully, it will as well guide healthcare workers to express empathy and reduce the burden. More crucially, such studies help with the needed adaptation associated with news of an HIV-positive diagnosis [2, 11, 14]. Consequently, it is hoped that this paper will facilitate a better acceptance of an HIV-positive sense of self which is known to aid PLWHAs to accept, adjust, and more effectively cope with their diagnosis. This will aid them to better manage the complexities of living with the infection [2, 17].

Previous research, particularly, similar qualitative works, have provided insights into initial post-HIV diagnosis engagement in HIV care, merits, and impediments to such engagement [1, 2]. This paper specifies the knowledge to Ghana and more importantly, Ghana's most HIV/AIDS-affected district [19, 20]. A thorough search on the immediate reactions of PLWHAs' post-diagnosis reactions in Ghana yielded no known results despite the fact that Ghana has a generalised HIV/AIDS epidemic: more than one percent of the residents have the infection [21]. This paper aims to fill that gap.

As underscored by the above-stated literature, studies and interventions of the behaviours surrounding news of the first diagnosis of HIV-positive status have a myriad of advantages, and thus, the potential to help PLWHAs cope better [10, 11]. Thereby, they facilitate reducing the debilitating effects of the pandemic. This is particularly critical in the context of Ghana's most HIV/AIDS affected district, the Lower Manya Krobo Municipality (LMKM). These

may have the positive effect of changing the story of Ghana's most HIV-impacted district [19, 20]. For instance, LMKM consistently had the highest HIV/AIDS prevalence in Ghana with the exception of the years 2011 and 2014 [22], and a tie for highest prevalence in 2016 [21].

Prior research has also established the fact that some of the PLWHAs in the LMKM, particularly the females, have very little social resources at their disposal. These include inadequate social support, quite entrenched poverty, distressed housing, and often single-parenting to support their biological children as well as children of extended family [23, 24]. In particular, it is well known that there is severe stigma, discrimination and abuse of PLWHAs in Ghana, including the LMKM [24, 25, 26], and sub-Saharan Africa (SSA) generally [27].

Immediate Reactions to News of HIV Positive Status in Africa

The literature on the immediate reactions to initial diagnosis of HIV-positive status is also sparse, and a majority of what research there is comes from South Africa. Such findings overwhelmingly corroborate each other: immediately after being diagnosed HIV-positive, PLWHAs studied depict deep negative emotions. Visser et al. [28] studied the phenomenon in South Africa, using a semi-structured interview of 293 pregnant women who were undergoing HIV test during antenatal care. On hearing the news, those who tested positive were shocked, and got frightened that they would be abandoned and discriminated against.

Fabianova [29, pp. 199-200] undertook a longitudinal study in Nairobi, Kenya, on the psychosocial aspects of being PLWHA. When the respondents who visited VCTs were first informed of their HIV-positive status, 89% of them felt sad due to their HIV-positive status, 60% had feelings of fear and anxiety, 30% felt angry, 25% felt distressed, and 15% cried. Additional, psychosocial behaviours exhibited by the respondents included grief, guilt, hopelessness, helplessness, anger, disbelief, self-blame or blamed others, and aggression towards a counsellor. Their sadness was mostly in reference to close relatives who had died of AIDS. Their fears related mostly to the loss of their social position. Other fears surrounded loss of life, ambition, sexual relations, independence, physical performance, and financial stability. While Fabianova [29, p. 201] observed from the extant literature that suicide is a common reaction for persons who are first informed of their HIV/AIDS status, her study found that less than 1% of participants attempted suicide on hearing of their confirmed HIV-positive status. Nevertheless, most of her respondents already considered themselves to be "walking corpses" and even visualised their funeral and grave.

Rankin and colleagues' [30] study in Tanzania concentrated on HIV-positive related stigma among PLHWAs. On hearing of their HIV-positive status for the first time, respondents thought of dying. Their reason? They felt they would be unable to cope with the shame and stigmatisation from family, friends, and the rest of society. For instance, most respondents lamented fear of being labelled using stigmatising language such as "walking dead." Greeff et al.'s [27] study in five Africa countries (Lesotho, Swaziland, South Africa, Malawi, and Tanzania) was on disclosure of HIV. Their findings were not different from those of Rankin et al. [30]. Their respondents' first reactions on hearing of their HIV-positive status were a cocktail of negative psychological emotions: expected stigmatisation, fear of death, and feelings of shame. As many as 46% of Wanyenze et al.'s [8] respondents in Uganda expressed fears of stigmatization, abuse and discrimination from their significant others and the rest of society when they were first informed of their HIV-positive status. Rankin and colleagues [30] argued that such negative reactions have impacted HIV testing programs across SSA negatively: most respondents were privy to suicide cases among infected persons stemming from the initial news of being HIV positive.

Skinner and Mfecane's [15] study conducted in South Africa revealed that upon hearing the news of HIV-positive status at first, the majority of respondents' reaction was fear that it would interfere with their sexual life: they,

particularly the males, feared that they would be unable to have sex. Ross et al. [31] concluded that most of their respondents' first reaction on hearing of the news of their HIV-positive status was shock, disbelief, denial and finally, internalised anger.

Factors related to the initial diagnosis of HIV/AIDS

Fabianova [29] enumerated several explanatory factors that unpacked her respondents' reactions to their initial diagnosis of HIV. These included gender, level of preparedness of a client in the pre-testing session, and type of sexual relationship they were in. Others included levels of general knowledge of HIV/AIDS, and HIV/AIDS-related stigma in the community. Fabianova [29, p. 199] discovered that males responded to the initial HIV/AIDS diagnosis with anger, disbelief, and aggression. The females cried, got shocked, "swallowed big lumps of air, saliva subconsciously, shook both their hands in refusal and blame [sic] the others almost immediately."

Other key explanatory factors for Fabianova's [29, p. 199] respondents' immediate reactions included concerns about "lack of immediate elaborate support structures", extent of level of awareness about HIV/AIDS, level of HIV/AIDS-related stigma, availability of antiretroviral therapy (ART), and support groups to enable them move on with their lives. Feelings of guilt for the infection were explained by whether the individual felt his/her lifestyle exposed him/her to it, and type of sexual involvement they were engaged in. They felt guilty that they would infect a spouse if they were married. If they were in an unstable/non-married relationship, they did not feel guilty, and shared the blame with the casual sexual partner. Sixty-two percent blamed their partners or the environment with the excuse that they stayed loyal to their partners. Fabianova's [2911, p. 200] respondents who tested on their own volition did so based on their own or a partner's "failure", poor health or "accidental happening", or work commitments.

Makoni et al.'s [32] study in Zimbabwe found that being afraid to know one's HIV status predicted unwillingness of their respondents to take tests to determine their status. Among PLWHAs in Southern Tigray, Northern Ethiopia, the main factors that explained late diagnosis of the infection were mostly, feeling healthy, fear of stigma and discrimination, and using traditional medicine [12]. Among Assen et al.'s [12] respondents, late presentation for HIV diagnosis positively correlated with ambulatory functional status, the use of Khat (an Arabian herbal shrub), being a Muslim, and being bedridden.

Furthermore, Beyene and Beyene's [33] study in a referral hospital in Bahir Dar, Northern Ethiopia, which explored factors that explain late diagnosis of HIV among their PLWHA respondents concluded that lack of formal education, internalised stigma, having low level of knowledge about HIV/AIDS, and lack of social influence by significant others to undertake voluntary counselling and testing (VCT) significantly predicted late HIV diagnosis.

Wanyenze et al.'s [8] research at Uganda's largest national referral hospital, Mulago hospital, to explain reasons for late initial diagnosis for HIV showed that the most important factor underpinning initial diagnosis was contact with/receiving care from an orthodox healthcare facility as against from a non-medical facility (traditional healer or herbalist, or even pharmacies and drug stores). Additional factors such as older age (31-45 years, compared to those 18-30 years old), low perceived risk of having HIV until one becomes ill, and perceived fears of negative social reaction towards them if they were diagnosed HIV-positive, significantly explained respondents reporting late for the initial diagnosis with HIV/AIDS.

Schlebusch and Govender [34] studied suicidal ideation among a hospital-based PLWHAs in South Africa right after they had been diagnosed seropositive. The vast majority (83.1%) of their respondents had elevated suicidal

ideation soon after their diagnosis. Being a younger male (less than 30 years) had significant association with elevated levels of suicidal ideation. In Ghana, the vast majority of PLWHAs Koka et al. [16] studied in the Central Regional hospital, were diagnosed for the first time with HIV mostly after they had reported to the hospital with persistent HIV/AIDS related opportunistic infections (mostly, frequent fever, followed by frequent coughing, then frequent diarrhea, or skin rashes). VCT was the least factor that led to their respondents' initial diagnosis. Koka et al. [16] asserted that stigmatisation and discrimination against PLWHAs was the main reason which prevents Ghanaians from checking their HIV status.

Opportunities for use of prevention of mother to child transmission (PMTCT) services present a window for the first diagnosis of women and newborns for HIV. However, globally, low utilization of services for maternal, newborn and child health (MNCH), and the non-routinisation of VCT services as part of MNCH services has been blamed for the often non-use of this opportunity. Particularly, missed opportunities for diagnosis during intrapartum, i.e., use of assisted delivery services, has been highlighted. Others are weak health care systems, and failure to monitor, track/follow up women and children post-delivery [35].

The interphase between depression and HIV/AIDS

The theoretical framework adopted for this paper, the theory of hopelessness, is grounded on depression. This necessitates a brief review of the literature on depression, including depression in sub-Saharan African settings. The impact of depression on health is critical, and said to be worse than that of other chronic diseases, such as hypertension and diabetes [36]. Depressive disorders are an important cause of mortality, for instance, in their association with suicide [36]. Depression is currently one of the five leading causes of the disease burden internationally, except in sub-Saharan Africa (SSA) [36]. Depressive disorders are projected to be second only to HIV/AIDS as the cause of disability by 2030 [36, 37]. Given these, researchers note that depressive disorders and other common mental health disorders (CMDs—depression, anxiety and somatization) were critically linked to the Millennium Development Goals, particularly gender equity, poverty, HIV/AIDS and maternal and child health [36, 38].

Globally, a strong relationship exists between suicide and HIV/AIDS [39]. They constitute two of the greatest healthcare challenges and are applicable to Africa's populations as well [34,40]. Depression is a common interphase between suicide and HIV/AIDS [29, 34, 39] Importantly, depression is the most diagnosed psychiatric disorder among PLWHAs. Depression also serves as a risk factor for the progression of HIV/AIDS. In fact, HIV-1 is associated with metabolic and immunologic disturbances. Among other bio-chemical alterations, PLWHAs have changes in their oxidant/antioxidant balance [7, p. 1].

In African settings, a growing appreciation of an important link between CMDs and HIV/AIDS has been established [7, 29] as well. HIV has unleashed "a significant strain" on mental health in Africa [36, p. 61; 41]. The huge burden of HIV/AIDS in SSA accounts for 16% of depression in the sub-region [36]. Fabianova [29] documented a range of between 40%-75% depression among HIV/AIDS orphans aged 10 years to adolescents who are themselves HIV-positive. She notes that HIV/AIDS presents a risk factor for depressive disorder among adolescents. Psychologically, HIV/AIDS is stigmatising, with poor prognosis in settings where antiretroviral therapy is scanty. In the Ghanaian cultural context, intersubjective processes of labelling (such as with witchcraft or discrediting notions of a particular illness) is a key underlying factor for self-discrediting definitions or self-stigmatisation, which is responsible for depression [42, p. 136].

Alternatively, a neurobiological association exists between HIV and CMDs: “the HIV virus has quite specific detrimental effects on neuronal function” [36, pp. 61, 65]. Evidence-based reports in African settings and other developing nations (Sao Paulo, Bangkok, Kinshasa, Nairobi, and Ethiopia), found both more symptoms and a higher prevalence of depression among symptomatic PLWHAs than among non-symptomatic or HIV-negative persons [36]. Tadios and Davey’s [43] study from Ethiopia, found an association between depression and self-reported lower levels of anti-retroviral therapy. Nevertheless, Byakika-Tusiime et al.s’ [44] study in Uganda which used a diagnostic assessment for depression, reported no association between depression and adherence to antiretroviral therapy.

Theoretical framework: the hopelessness theory

The hopelessness theory is applied to this paper. It is a diathesis-stress theory which posits that organisms express some form of cognitive and emotional deficits after experiencing a bad event. The theory argues that three depressogenic inferential styles serve as risk factors of depression [45, 46]. These are the tendency to attribute a bad event to a global or stable cause; the tendency to perceive bad events as having many disastrous consequences; and the propensity to view oneself as flawed or inefficient [46, 47]. Making negative inference upsurges the possibility of hopelessness while feeling hopeless makes depression inevitable. With this explanation, the theory assumes hopelessness as a critical underlying factor to depression. Adding to the causal explanation, Seligman [48] stated that the symptoms, cure and prevention of a bad event also model depression.

Despite the fact that the theory seems accurate in explaining depressive symptoms in human and animal species both in laboratory and natural settings, critics argue that the theory is inadequate in explaining the generality and chronicity of depression. This critique informed the modification of the theory along its attributional lines: the causal-internal/external, stability/instability and global/specific explanations attributed to the bad event [4, 49]. The central prediction of this revision shows that individuals who explain negative events with internal, stable and global factors are more likely to exhibit depressive symptoms when experiencing bad events.

In recent times, HIV is classified as a lifestyle and chronic/lifetime virus. Although incurable, HIV can be prevented. For this reason, individuals infected with the virus tend to blame themselves either for living a reckless lifestyle or having to live a lifetime with the many disastrous ramifications of the virus. Govender and Schlebusch [40] added that the attribution of HIV to a negative life event is mainly because an HIV-positive diagnosis leads to marital and financial problems, stigmatisation or discrimination by family and community, and/or problems in accessing health services.

Making such negative inferences exacerbate the feeling of hopelessness and increases the likelihood for individuals to show depressive symptoms. The loss of control over one’s life, fear of the future, feelings of helplessness and internalised stigma which lead to guilt and self-blame, are common reactions PLWHAs exhibit upon receiving an HIV-positive result [11, 50]. In societies like Ghana, where HIV is associated with nonconformity to societal expectations and/or sexual promiscuity, PLWHAs may be more exposed to adverse emotional and cognitive symptoms after receiving an HIV-positive report. To this end, this study seeks to explore the psychopathological manifestations among PLWHAs upon receiving an HIV-positive test report, and to highlight feasible public health responses to managing these.

The application of the hopelessness thesis to HIV-positive populations in SSA is not new. Govender and Schlebusch’s [40] study in Kwa-Zulu Natal, South Africa, applied Beck’s Hopelessness Scale and Beck’s depression Inventory [51] to their assessment of the correlation between depression, hopelessness, and suicidal thoughts in

PLWHAs. Schiebusch and Govender [34] used the same inventories to study PLWHAs in a University-affiliated hospital in South Africa. Primarily, they studied the prevalence of risk of suicidal ideation in PLWHAs immediately after their first diagnosis. Kylmä et al. [50] also studied the full gamut/dynamics of the concept of hope (hope, despair, hopelessness) among PLWHAs. Their study yielded information on how PLWHAs' perceptions of hope could facilitate their clinical care.

Methods

Study setting and cultural context of LMKM

The LMKM, the catchment area for the study, is situated in the Eastern Region of Ghana. The region, one of ten at the time of data collection, had 2,633,154 residents by Ghana's last Population and Housing census of 2010, making it the third most-populated region. The Eastern Region is mostly semi-urban [52]. The LMKM, one of 26 administrative municipalities/districts in the Eastern Region by the time of data collection, covers 12.4% of the region, with total land mass of 304.4 km². The 2010 Population and Housing Census recorded 89,246 residents of the Municipality comprising 46.5% males and 53.5% females. Christians form 92.8%; other religious groups include Muslims and traditionalists [53]. The indigenes are ethnic Dangmes and speak Krobo. They are a patrilineal descent group, which means they inherit property through their father's lineage. The primary occupations of the residents are farming and fishing. These, and other informal private employment are prevalent in the district, engaging 83.6% of employees. Youth unemployment is particularly entrenched; LMKM has the highest youth unemployment rate in the Eastern Region [20, 53, 54] with corresponding high poverty rates [55, 56]; as informal sector employees in Ghana usually earn below the US\$2 national daily minimum wage [57]. Inadequate housing and overcrowding are endemic in Ghana generally [58, 59] (, with four or more persons living in single rooms on average [53, 54]. Housing conditions, basic amenities, quality, and overcrowding may, however, be worse in the LMKM [23, 60, 61]. These poor housing conditions in the LMKM, which include inadequate running water in homes which is only 15%, lightening, and toilets, constitute a huge health challenge to persons with compromised health status, such as PLWHAs [54, 61].

Traditional kinship norms in Ghana usually leverage political, social and economic fortunes of persons, particularly women [62, 63]. In Ghana, like most parts of Africa, and thus the LMKM, kinship ties comprise both nuclear and extended family, and inform a wide range of behaviours [63, p. 2]. Although on the decline [19, 64], the extended family system potentially has immense advantages, including proffering social support, particularly for the vulnerable. It is not without its demerits, though. As Sedziafa et al. [63] point out, kinship and descent norms generally disadvantage women of patrilineal descent, compared to their matrilineal counterparts. Such cultural tenets, then, are expected to play a role in the livelihood of PLWHAs.

Sampling and Data collection

This study used a "descriptive, multiple case study approach" [2, p. 2; 65]. This method generates interviewees' in-depth descriptions of their situations, views and realities regarding issues. This provides deep insights of their actions and choices [66]. As Kutnick et al. [2p. 2] note, case studies are exceptionally useful in eliciting contextual situations, when they are useful to a particular study. Examples are cultural, social and structural impediments (such as stigma, and fear) to post-diagnosis HIV care [65].

Ethical clearance and data quality approaches

Ethical clearance was sought from the Ethical Committee for Humanities at the University of Ghana, Legon, and the Ethical Review Board of the Memorial University at St. Johns, Newfoundland, Canada. Permissions were also sought from the Ethical Review Committee of the Ghana Health Service for using institutions under its jurisdiction for our study, as well as from the Eastern Regional Directorate of the Ghana Health Service. The District Health Management Directorate of the LMKM and the administrators of the study hospitals responded to our written permissions with verbal permissions to undertake the study.

Additional data quality approaches we took included a three-day interviewer training and on-site supervision during the data collection by designated supervisors and the PIs. Respondents participated in an informed consent process and provided written consent unless the respondent was not literate; in such cases, verbal consent was provided. We did not use any identifiable markers for the respondents [see 20, 23, 24, 69].

Data Analysis

The data were transcribed verbatim, and reviewed by the author and team of transcribers to ensure accuracy. The adequacy of translation from the local languages to English was ascertained in several ways. First, the transcriptions were undertaken by the same research assistants (RAs) who did the interviews. Thus they had prior insights to the data and trends of the conversation. Second, these RAs are mostly indigenous Krobos and also speak Akan fluently. Hence, they naturally understood the conversations. Third, to enhance the reliability of the data, several meetings were held between the author and the transcribers to interrogate the correct translations forth and back till a mutual agreement was reached on the correct translations. A similar approach was used to verify the coding. The author and RAs speak advanced English as a second language. Occasionally, the respondents used corrupted English for words that do not have direct indigenous language versions of the English language. For instance, AIDS has been commonly adopted by persons in the study locality who speak little or no English, as “AAs”. The interviewers always probed what the respondents meant by such colloquial English.

Based on previous research [2, 11, 50] respondents’ first reactions to their HIV-positive diagnosis were adjudged as negative if the respondent either expressed shock, disbelief, worry, fear/panic, felt the HIV infection would kill him/her, or immediately contemplated suicide. Respondents’ reactions were classified as an acceptance if they readily accepted the diagnosis and/or showed some optimism instantly that he/she could survive the infection. Finally, the reactions were considered neutral when the respondent indicated he/she showed no immediate reaction upon receiving the first news of their HIV-positive status. Due to the similarity of the explanations those who readily accepted their diagnosis and those who reacted neutrally gave, these two reactions towards the initial diagnosis is captured as resignation (Figure 1 & Table 1).

—FIGURE 1 HERE—

The following sections present information on the immediate reactions of the respondents after their HIV-positive status was revealed to them. Next, the background characteristics of the sample is presented, followed by the findings. It ends with discussion, conclusion and recommendations.

Results

Socio-demographic characteristics of respondents

The respondents' ages ranged from 25 to 68, with a median age of 49 years (SD = 10.94; mean 46.84 years). They were mostly females (21/26), primarily indigenous Dangmes (84.62%, n = 22), and had low socio-economic status. They were mostly petty traders (9/26), 7/26 were unemployed, and one had taken early retirement. They generally had low educational status: five had no formal education, 13 had below basic school education (9 years of current basic schooling or 10 years of former basic schooling); only two had tertiary level education, one of which was an associate's degree. Also, they were mostly single (separated/widowed after cohabiting/never married/widowed: 16 [61.54%]). Six were married, and three were cohabiting. The duration of HIV-positive diagnosis ranged from six months to 12 years, with a median of 5.0 years (mean of 5.43; SD = 3.52 years). One respondent mentioned she had been diagnosed "less than a year ago" and was not added to the calculation of the median years of diagnosis, due to the lack of specificity. Twelve (46.15%) had biological dependents who were mostly children (zero to three years old) but a few were adults (older than 18 years) at the time of diagnosis.

Thematic findings

Initial reactions

Table 1 summarises the reactions of the respondents, upon hearing the news of their HIV seropositive status for the first time. There were negative and resigned reactions. Verbatim responses are identified with respondent numbers.

Negative reactions. The data showed that the vast majority of the sample (21/26) seemed to have been very hard hit and traumatised by the news of HIV-positive test result, and expressed very negative sentiments. For these, the reactions ranged from disbelief, to being very disturbed. Few mentioned the thought of killing themselves, incessant crying, and feeling that they would die from HIV. Other reactions included being very frustrated, very surprised, very frightened, deep shock, deep worry, being heartbroken/devastated, self-blame, and avoiding going to hospital till conversion to AIDS (Table 1):

"It was very hard for me when I first heard it; in fact, I cried and cried." (R4). "In fact I was very frustrated. I even decided to take poison so that I will die before the sickness [HIV] becomes worse." (R5).

"I was very surprised and shocked when I was first told I had this disease. It was very heart-breaking." (R7).

Resigned reactions. On the contrary, five respondents showed resignation towards the bad news. These comprised three who readily accepted the diagnosis and two who seemed neutral to it. From their responses, respondents who accepted their diagnosis seemed to have readily and consciously accepted/embraced the diagnosis of HIV-positive and encoded it rather smoothly as part of their identity.

"When I was told I was not perturbed because I knew people who were also taking the drug" [ARVs]. (R25).

The two respondents who seemed to have been neutral to their first diagnosis of HIV/AIDS seemed to have continued with their lives seamlessly on the spare of the moment they received the news, and did not take a break to react to the news of being HIV-positive.

"I was ill for long time so when I was told about it I only continued to take medications." (R22).

Further analysis indicated that these initial reactions were influenced by certain background situations. These are discussed in the next section.

—TABLE 1 HERE—

Factors influencing the immediate reactions

For the very few (2/26) respondents who were neutral in their initial reactions, being ill for a long time before the first news of HIV-positive diagnosis, and accepting that sickness is inevitable and could happen anytime, were what influenced their immediate reactions:

"...as for sickness, it's sickness; you have less control over sickness, so I didn't really do anything." (R23).

Two of three respondents who readily accepted their HIV-positive status when diagnosed for the first time said they experienced persistent comorbidities from the HIV infection. Resultantly, they voluntarily went to the VCTs to test for their HIV status:

"I started falling sick and strange rashes kept appearing on my skin, so when I took it to the hospital, I was told it was the virus." (R24).

"I frequently fell sick...and it was not getting better so I came to the hospital myself...I came (willingly) to them to be tested when I realised I have changed. So they were even happy I walked to them myself to be tested." (R25).

Including two multiple responses, the vast majority who responded negatively to the news of their HIV-positive status, mentioned four main situations that informed their immediate reactions to their HIV-positive diagnosis. Mostly, they suffered comorbidities from their infection (11/21).

Next, the respondents who reacted negatively said a spouse/partner was HIV-positive and thus knew they had contracted the infection from them, and/or due to that, health personnel tested them also for the infection (10/21). Importantly, most of these PLWHAs did not know their partners' HIV status prior to respondent's diagnosis.

"I was staying with my husband by then but he died so it was after he died that the doctors realised that it was this disease he died of... afterwards I was tested and diagnosed with this disease." (R1).

Similar to those who readily embraced their diagnosis, a few of those who reacted negatively were tested voluntarily based on their sexual partner's infection. Likewise, several participants whose reactions were triggered by experiencing comorbidities said they voluntarily went for the testing. Additionally, for a slim minority of the latter, their conviction to go for the VCT was based on mass media (often television) announcements and discussions on the signs and symptoms of HIV/AIDS.

"Already I suspected that my husband had all the symptoms that are discussed on TV and radio about this disease. He fell sick often and also coughed most of the time." (R3).

"Even though I wasn't falling sick, I came to be tested willingly after they announced everybody should get tested...." (R11).

"...I used to fall sick frequently and that was when a lot of noise and adverts were made about this disease on television and radio...I went to the St. Martin's hospital and told the doctors about my situation and he asked me go for an HIV test and that was when I got to know I had this disease." (R2).

Finally, few (3/26; including two who gave multiple responses—primarily that a spouse/partner was HIV-positive) mentioned that they got tested when they were pregnant.

"I was about to give birth to my second born...my husband is also HIV-positive." (R4).

"I was diagnosed when I was pregnant when my second born and I visited the hospital... Yes, [my husband is HIV-positive]." (R8).

Factors that facilitated transitioning to accept HIV-positive self

For the few respondents who showed resignation towards the initial news of their HIV-positive diagnosis, there was no need for transitioning to accepting an HIV-positive self. Two of the three respondents who readily embraced the diagnosis said they already knew persons who were HIV-positive and were taking antiretroviral medications (ARVs):

"I realised I was not the only victim; many people are also victims..." (R26).

Two others said they already had comorbidities from AIDS and started treatment right after diagnosis:

"I was ill for a long time so when I was told about it I only continued to take medications."

(R22).

Another participant thought sickness is inevitable and thus did not need to worry about such diagnosis.

"...After I came here [VCT] and was advised and encouraged to see something to live for, I have been okay. They [health personnel] have been very friendly and encouraging. In fact, they have helped me a lot." (R9).

"They [health personnel] counsel us and tell us the fact that we have this virus does not mean our world has come to an end." (R11).

"...After being put on medication, going through counselling and tests, and being told what to do, I was hopeful that if you adhered to the medication you could live long." (R19).

For one of these, her mother-in-law was the main person who empathised with her:

"I was really worried and disturbed but the encouragement and advice from the nurses and my mother-in-law... has helped me. After I told her [mother-in-law] I had been diagnosed...she brought me here [VCT] to introduce me [to a nurse], so she has been helpful." (R12).

The second main issue that facilitated the transitioning for few of the respondents was their awareness of the current medical advancement in the treatment of HIV infection, due to which *"you would live long"* (R19) despite the infection:

"...because they have drugs to treat it, I was OK. Provided it will not cut short my life span I am happy." (R10).

"In the olden days when there were no drugs you thought you would die...after being told, so you become afraid, but now we know there are drugs available so if you are able to take your drugs you don't have any problem." (R26)

A few respondents also alluded to accepting medical diagnoses, facing reality, and living by Biblical principles as facilitating their acceptance of their diagnosis.

"I accepted it because you can't deny what a doctor says" (R10).

"I was disturbed but I thought to myself that it had already happened" (R18).

"I didn't kill myself because I am a Christian and the Bible speaks against that. I forgot about everything and decided to keep coming for the medications and now by the grace of God I have lived for over twelve years." (R5).

There was, however, a lone-voice who said she had still not settled down to the reality of being HIV-positive after having been diagnosed three years prior and seeking treatment for one-year post diagnosis. Thus, she has not been consistent in getting treatment and is already fed up with seeking treatment:

"It seemed to be untrue. From time to time I stopped taking the medication...I am fed up with coming to seek treatment. I have been treating the sickness for over a year but the symptoms recur after I see the doctor." (R20).

Although this lone-voice is ordinarily not different from the vast majority of the respondents, particularly the females (she was 50 years old, was unable to work due to her comorbidities, widowed from a husband who died of AIDS, had no formal education), her living circumstances at the time of data collection seemed more/very harsh. She alluded to a drastic change in her health, looks, and living circumstances after her HIV-positive diagnosis. Her severe comorbidities were probably due to starting healthcare for HIV two years after diagnosis. She described extreme discrimination and ostracisation both at home and in public; she has had terrible side effects from her antiretrovirals, and has barely any social support from her four adult children, family of origin, and that of her late husband. She was also facing severe housing and food challenges. However, she mentioned getting some support

from the Government: *"Apart from money I get from the government I want to work. I have work."* This support is part of a programme the Government undertakes in the form of very minimal monthly cash stipends and free National Health Insurance coverage to some of the poorest in Ghana. Some of her vulnerabilities have been captured in Box 1.

Box 1: Some 'voices' from the lone-voice.

If you saw my previous sleeping place; how I used to be versus how I have become now. I have been thinking. I have many worries. This isn't how I always am. Sometimes when I think my head feels strange. I can't sleep. I used to work always...since childhood. However, when I contracted the disease I didn't know what it was. I kept losing weight, people used to laugh at me.

I often feel cold... My eyes hurt; My eye as you see it... So now it's both my thighs and my eye... my body itself...I feel weak. For about a year, eight months, I had been having malaria symptoms. My veins here have swollen. My feet hurt even whiles sitting now.

mmmm. The issue is I don't know how to read, but I have to take 5 medications all on time.

I don't have a place to sleep...I sleep on the floor; I sleep outside, on the veranda in the family house, some complained about sharing the bed with me for fear of being infected...I sleep on the floor. When they pass me by with water they fetched to bath, it spills over on me. Oh, she [her daughter] has even told me not to come close to her because her children will be infected.

People's behavior changes when they see the medicine. Just like I said, we don't stay together. My mother, with whom I stay in this village even cooks separately because of that. When she cooks she would serve mine separately. As for the children, I don't know where I contracted the disease so they don't want to come close to me. We are not like we used to be; we no longer cook and eat together in the earthenware, or take a bath together. Even now I bathe using a separate bucket. I use my own earthenware/ grinding mortar...Everything is separate. I wash my dishes separately

They call me names. Oh if you are sick—they say I have AIDS, see how it shows all over her body; see how lean she's grown. Because of this sickness I suffer a lot of stigmatization. The Agormanya market? People will even be watching closely. If I say now that I am going to buy fish to eat, the person will say I shouldn't touch the fish, "stand aside and let me do it for you", when they see how I have become. So I don't go out. I won't lie to you. But should the medicine work so that I would look "fine" I can work.

[Does someone give you aid/assistance?] There's no one because I could not give my children education I couldn't enroll the children in school so they are not able to take care of me. My mother in-law didn't treat me well. So I left, I left when he [husband] died. She knew her son died of this disease.

Some are fortunate, they have benefactors. Some have helpers. Some have people who cook for them to eat. I have been hungry since morning. I haven't eaten. When I go there'll be no food for me... These are my big problems. So when will I be healthy/strong? Currently I am only concerned about my health.

I don't know whether it will destroy my health or kill me. I think about when I will ever get well. As I am now, I am unable to go anywhere. When there's an occasion, I can't participate. So...I think about it.

Discussion

Fear has been associated with HIV since its discovery in the 1980s. Fear is mostly fueled by misconceptions associated with the virus which is mostly linked to death and stigmatisation [72]. Grounded on fear of death and a feeling of helplessness, a wide range of reactions are exhibited upon diagnosis or disclosure of an individual's HIV-positive status. Although these reactions are both from the individual in question and significant others of this individual, the literature has mostly focused on the reactions of the persons affiliated with these individuals after disclosure [27, 73]. Indeed, very few studies explore the individual's reactions upon diagnosis or testing positive for the virus [72, 74]. Based on this drawback and the known public health significance of such immediate reactions to HIV-positive diagnosis, this paper examined the first reaction of Ghanaian PLWHAs after hearing the "bad news" initially.

The findings from this study have corroborated those of previous authors that receiving the news of newly-diagnosed HIV-positive status is often met with reactions that are "complex and multi-faceted" [2, p. 12]. Additionally, the findings that respondents had varied responses and a myriad of reactions to the first news of their HIV-positive diagnosis is in line with reports from several studies [example, 2, 74]. Most of the initial reactions of respondents in this study were very traumatising and discouraging. These included a few who contemplated suicide upon hearing the news; supporting Fabianova's [29] findings in Nairobi.

Again, the paper corroborates previous findings and highlight the buffering role of healthcare providers in moderating the reactions of newly-diagnosed PLWHAs [1, 11]: the vast majority of the respondents who adapted to their HIV-positive status attributed it to counselling and support from healthcare personnel. This role of the healthcare workers in aiding respondents' transition to accepting their HIV-positive selves affirms the documented importance of social support in ameliorating the otherwise negative effects of experiencing a health trauma [29, 42]. Research has identified HIV counsellors' or health providers' choice of words and emotions as crucial in determining peoples' reaction to the initial diagnosis of HIV infection [72, 74]. When these emotions were hopeful and assuaging, patients were more likely to be calm and comforted and vice versa [74].

The findings of this study underscore the fact that newly-diagnosed PLWHAs will need to receive such interventions early [12]. These interventions are needed to give them hope in life to abate extreme psychosocial trauma that can be associated with new diagnosis of an HIV-positive status [11, 75]. Per the findings of this paper, such interventions should include educating newly-diagnosed PLWHAs that new medical advances for HIV-positive infection make it possible for newly-infected PLWHAs to lead normal lives and live long, if they seek early treatment and adhere to prescribed healthcare.

A fair number of the respondents mentioned being infected by their spouses/partners who were alive or deceased [also see 69], implying that they probably were not using condoms and other modes to prevent HIV transmission from their sexual partners. This finding is not unlikely considering that Owusu [24] found that the PLWHAs studied were hardly using any form of protection against HIV with their sexual partners, whether in stable or unstable relationships. Two respondents were exceptions—they used condoms, but inconsistently [69]. Furthermore, Owusu [69] found that the unmarried or non-co-habiting PLWHAs had not disclosed their HIV-positive status to their sexual partners, with the exception of one respondent. PLWHAs who fail to disclose their status to their partners may have been living in a state of denial and or may fear/have feared the ramifications of disclosing their status. They may thus refuse to disclose as a way of attenuating the anticipated effect of disclosing, as previous authors have attested to [12, 15, 29].

Additionally, findings from this paper illuminate the importance of voluntary counseling and testing. Majority of respondents mentioned having had comorbidities before they tested for their HIV-positive status. Other researchers have indicated that anticipated reaction influences decisions on voluntary testing for HIV [72, 74]. Previous research clearly notes potential barriers to voluntary testing for HIV in Ghana. These include the fear of stigma, discrimination and abuse, and possible dissolution of romantic relationships associated with being a PLWHA. Importantly, there is fear of the perception that an HIV-positive diagnosis is a death warrant [16, 76]. In Ghana, complying with WHO/United Nations' norms means that by the policy of the Ghana Health Service, HIV testing is provided to all pregnant women who report to orthodox healthcare centres for antenatal care on registration, although they could opt-out.

Limitations

The qualitative nature of this study helps with unearthing the complexities associated with receiving initial news of an HIV-positive diagnosis and learning about the adaptation process [2]. Also, the repeated data analyses this paper employed strengthens its reliability and validity. However, when interpreting these findings, some limitations should be considered. First, with HIV-positive status being a very sensitive issue, social desirability of responses may have influenced the findings [2]. Being a retrospective study, recall bias may also affect the reliability of the responses [2, 20]. Furthermore, the study is cross-sectional and does not permit inference of causality [77]. Additionally, being a qualitative study with a mostly purposive and a fairly small sample size, the findings are not generalisable to non-respondents in the LMKM and also, Ghana as a whole [77]. Lastly, based on the primary focus of the project, this paper did not undertake a diagnostic assessment for depression among the respondents. The paper is thus unable to ascertain if depression contributed to the initial reactions of the respondents upon diagnosis.

Conclusions

Evidence elsewhere suggests that upon receiving the initial news of an HIV-positive diagnosis, most people have strong psychosocial reactions [29, 72, 78]. Yet little research has focused on the initial reactions of newly-diagnosed PLWHAs in SSA, particularly Ghana. Neither has the implications of their reactions for personal and public health been extensively studied [2, 11]], although very critical. This makes this study of the immediate reactions to the first news of an HIV-positive diagnosis very timely. This paper is also important given the known interplay between the initial reactions to HIV-positive diagnosis, adaptation, and promoting personal and public health/safety [4, 40, 72]. The personal and public health implications of one's initial reactions to the first HIV-positive diagnosis is critically important for Ghana, which has a generalised HIV-positive infection.

Abbreviations

AIDS

Acquired immune deficiency syndrome

ART

Anti-retroviral therapy

ARVs

Antiretroviral medications

CMDs
Common mental health disorders
ECH
Ethics Committee on Humanities
ERC
Ethical Review Committee
GAC
Ghana AIDS Commission
GHS
Ghana Health Service
GSS
Ghana Statistical Service
HIV
Human immunodeficiency virus
LMKM
Lower Manya Krobo Municipality
MNCH
Maternal, newborn and child health
NAP+
National Association of Persons Living with HIV/AIDS
PI
Principal Investigator
PLWHAs
Persons living with HIV/AIDS
PMTCT
Prevention of mother-to-child transmission
RAs
Research Assistants
SES
Socio-economic status
SSA
Sub-Saharan Africa
SDG
Sustainable development goal
TV
Television
UCSF
University of California San Francisco
UNAIDS
United Nations Joint Program on HIV/AIDS
VCT
Voluntary counselling and testing
VL
Viral load

Declarations

Ethics approval and consent to participate

Ethics approval were sought from the following: 1) Ethical Review Board of the Memorial University at St. Johns, Newfoundland, Canada, 2) the Ethics Committee for Humanities at the University of Ghana, Legon (ECH 017/14-15), and 3) the Ghana Health Service's Ethical Review Board (GHS-ERC: 02/11/14). Permission to conduct the study were also received from 1) the Ghana Health Service's Eastern Regional Directorate, 2) The LMKM Directorate of the Ghana Health Service, and 3) the Administrators of the Atua Government, and St. Martins DePores hospitals. Each participant gave a written or verbal informed consent to participate before they were interviewed.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during this study are available from the author on reasonable request. The question guide used for this study has been submitted as an additional file.

Competing interests

The author declares that there are no competing interests.

Funding

Funding for data collection for this research was provided by the International Development Research Centre (IDRC), through the Canadian-African Research Grant. Matching grants were provided by the Department of Sociology, Memorial University of Newfoundland and Labrador, Canada. IDRC and the Memorial University played no role in the design of the study, data collection, analysis, and interpretation, as well as the writing of the manuscript.

Author's contributions

AYO contributed to conceptualising the study and served as a co-Principal Investigator (co-PI). AYO mostly focused on the qualitative aspect of the project from which the data for this paper emanates. AYO also developed the in-depth interview guide, helped to liaise with technical staff of the Ghana Health Service and Ghana AIDS Commission for explanations to some HIV/AIDS technical and policy-related issues in Ghana. Furthermore, AYO led in the acquisition of ethical clearance from the University of Ghana. Additionally, AYO co-supervised field staff during the data collection, and handled the quality control, and analysis of the qualitative data. AYO wrote and finalised this paper single-handedly. Since this paper is sole-authored, the final version of the manuscript does not require the approval of any other person prior to being submitted and published.

Acknowledgements

Professor Eric Y. Tenkorang of the Department of Sociology, Memorial University of Newfoundland and Labrador in Canada, was a co-PI for the project and participated in the data collection. Professor Tenkorang also principally solicited for the funds for this study from the IDRC. The Author is grateful to him. Dr. Kofi Takyi Asante of ISSER, University of Ghana, Legon, is also acknowledged for proofreading an earlier version of this paper.

Author's information

AYO is an Associate Professor at the Institute of Statistical, Social and Economic Research, College of Humanities, University of Ghana, Legon, Ghana. AYO is a Medical Sociologist, Public Health, and behavioural health specialist.

References

1. Chu C, Selwyn PA. Diagnosis and initial management of acute HIV infection. *American family physician*. 2010 May 15;81(10):1239-44.
2. Kutnick AH, Gwadz MV, Cleland CM, Leonard NR, Freeman R, Ritchie AS, McCright-Gill T, Ha K, Martinez BY, Banfield A, Belkin M. It's a process: reactions to HIV diagnosis and engagement in HIV care among high-risk heterosexuals. *Frontiers in public health*. 2017 May 10;5:100. <http://doi.org/10.3389/fpubh.2017.00100>.
3. UCSF. *Coping with HIV/AIDS: Mental Health*. HIV In Site Project: the UCSF Center for HIV Information. 2018. <http://hivinsite.ucsf.edu/inSite?page=pb-daily-mental>. Accessed 2 May 2018.
4. Peterson C, Seligman ME. Causal explanations as a risk factor for depression: Theory and evidence. *Psychological review*. 1984 Jul;91(3):347. <http://dx.doi.org/10.1037/0033-295X.91.3.347>.
5. Alford K, Banerjee S, Nixon E, O'Brien C, Pounds O, Butler A, Elphick C, Henshaw P, Anderson S, Vera JH. Assessment and management of HIV-associated cognitive impairment: experience from a multidisciplinary memory service for people living with HIV. *Brain sciences*. 2019 Feb;9(2):37. Doi: 10.3390/brainsci9020037.
6. Stein DJ, Seedat S, Emsley RA, Olley BO. HIV/AIDS in Africa—a role for the mental health practitioner? *South African Journal of Psychiatry*. 2005;95(3):167-68.
7. Rivera-Rivera Y, García Y, Toro V, Cappas N, López P, Yamamura Y, Rivera-Amill V. Depression correlates with increased plasma levels of inflammatory cytokines and a dysregulated oxidant/antioxidant balance in HIV-1-infected subjects undergoing antiretroviral therapy. *Journal of clinical & cellular immunology*. 2014 Dec;5(6). DOI:[10.4172/2155-9899.1000276](https://doi.org/10.4172/2155-9899.1000276).
8. Wanyenze RK, Kamya MR, Fatch R, Mayanja-Kizza H, Baveewo S, Sawires S, Bangsberg DR, Coates T, Hahn JA. Missed opportunities for HIV testing and late-stage diagnosis among HIV-infected patients in Uganda. *PLoS One*. 2011;6(7). doi.org/10.1371/journal.pone.0021794.
9. Nairaland Forum. A female doctor commits suicide after testing positive to HIV. 2011. <http://www.nairaland.com/720421/female-doctor-commits-suicide-after>. Accessed 25 May 2018.
10. Hosek SG, Lemos D, Harper GW, Telander K. Evaluating the acceptability and feasibility of Project ACCEPT: An intervention for youth newly diagnosed with HIV. *AIDS education and prevention*. 2011 Apr;23(2):128-44. <http://doi.org/10.1521/aeap.2011.23.2.128>.
11. Moitra E, Chan PA, Stein MD. Open trial of an acceptance-based behavior therapy intervention to engage newly diagnosed HIV patients in care: rationale and evidence of feasibility and acceptability. *Behavior modification*. 2015 Sep;39(5):670-90. <https://doi.org/10.1177/0145445515590977>.

12. Assen A, Molla F, Wondimu A, Abrha S, Melkam W, Tadesse E, Yilma Z, Eticha T, Abrha H, Workneh BD. Late presentation for diagnosis of HIV infection among HIV positive patients in South Tigray Zone, Ethiopia. *BMC public health*. 2016 Dec;16(1):558. DOI 10.1186/s12889-016-3263-y.
13. Dodd PJ, Garnett GP, Hallett TB. Examining the promise of HIV elimination by 'test and treat' in hyper-endemic settings. *AIDS (London, England)*. 2010 Mar 13;24(5):729-35.
<https://doi.org/10.1097/QAD.0b013e32833433fe>.
14. Pettifor A, MacPhail C, Corneli A, Sibeko J, Kamanga G, Rosenberg N, Miller WC, Hoffman I, Rees H, Cohen MS, NIAID Center for HIV/AIDS Vaccine Immunology. Continued high risk sexual behavior following diagnosis with acute HIV infection in South Africa and Malawi: implications for prevention. *AIDS and Behavior*. 2011 Aug 1;15(6):1243-50. <https://doi.org/10.1007/s10461-010-9839-0>.
15. Skinner D, Mfecane S. Stigma, discrimination and the implications for people living with HIV/AIDS in South Africa. *Sahara-j: Journal of Social Aspects of HIV/AIDS*. 2004 Nov 1;1(3):157-64.
16. Koka E, Ahorlu CK, Agyeman DK. Social Death through HIV and AIDS Stigmatization and Discrimination in Ghana: A Case Study of the Central Regional Hospital, Cape Coast, Ghana. *Advances in Applied Sociology*. 2013 Sep 20;3(06): 231-36.
17. Gwadz M, de Guzman R, Freeman R, Kutnick A, Silverman E, Leonard NR, Ritchie AS, Muñoz-Plaza C, Salomon N, Wolfe H, Hilliard C, Cleland, C. M., & Honig, S. Exploring how substance use impedes engagement along the HIV care continuum: a qualitative study. *Frontiers in public health*. 2016 Apr 8;4:62.
<http://doi.org/10.3389/fpubh.2016.00062>.
18. Miller WC, Rosenberg NE, Rutstein SE, Powers KA. The role of acute and early HIV infection in the sexual transmission of HIV. *Current Opinion in HIV and AIDS*. 2010 Jul;5(4):277-82.
<http://doi.org/10.1097/COH.0b013e32833a0d3a>.
19. Lund R, Agyei-Mensah S. Queens as mothers: The role of the traditional safety net of care and support for HIV/AIDS orphans and vulnerable children in Ghana. *GeoJournal*. 2008 Mar 1;71(2-3):93-106.
<https://doi.org/10.1007/s10708-008-9145-9>.
20. Owusu AY, Laar A. Managing HIV-positive sero-status in Ghana's most HIV concentrated district: self-perceived explanations and theoretical discourse. *African Journal of AIDS Research*. 2018 Jan 2;17(1):82-90.
<http://doi.org/10.2989/16085906.2017.1419268>.
21. GAC. Summary of the 2016 sentinel survey report. Accra: GAC.2017.
http://www.ghanaid.gov.gh/gac1/aids_info.php. Accessed 10 Jan 2018.
22. GAC. HIV Sentinel Survey Report 2014. Ghana. Accra: GAC. 2015.
23. Tenkorang EY, Owusu AY, Laar AK. Housing and health outcomes of persons living with HIV/AIDS (PLWHAs) in the Lower Manya Krobo district, Ghana. *Journal of health care for the poor and underserved*. 2017;28(1):191-215. DOI:10.1353/hpu.2017.0017.
24. Owusu AY. Social contexts of living with HIV/AIDS in the Eastern Region of Ghana. *İstanbul Üniversitesi Sosyoloji Dergisi [Istanbul University Journal of Sociology]*. 2019;39(2):425-54.
<https://doi.org/10.26650/SJ.2019.39.2.0109>.
25. GSS, Ghana Health Service, & ICF Macro. Ghana demographic and health survey, 2008: final report. Accra: GSS. 2009.
26. Tenkorang EY, Owusu AY. Examining HIV-related stigma and discrimination in Ghana: what are the major contributors? *Sexual health*. 2013 Jul 2;10(3):253-62. <http://doi.org/10.1071/SH12153>.

27. Greeff M, Phetlhu R, Makoe LN, Dlamini PS, Holzemer WL, Naidoo JR, Kohi TW, Uys LR, Chirwa ML. Disclosure of HIV status: experiences and perceptions of persons living with HIV/AIDS and nurses involved in their care in Africa. *Qualitative health research*. 2008 Mar;18(3):311-24. <https://doi.org/10.1177/1049732307311118>.
28. Visser MJ, Makin JD, Vandormael A, Sikkema KJ, Forsyth BW. HIV/AIDS stigma in a South African community. *AIDS care*. 2009 Feb 1;21(2):197-206.
29. Fabianova L. Psychosocial aspects of people living with HIV/AIDS. In *Social and psychological aspects of HIV/AIDS and their ramifications* 2011 Oct 26. IntechOpen. doi: 10.5772/21148. <https://www.intechopen.com/books/social-and-psychological-aspects-of-hiv-aids-and-their-ramifications/psychosocial-aspects-of-people-living-with-hiv-aids>. Accessed 14 Oct 2019.
30. Ross MW, Tebble WE, Viliunas D. Staging of psychological reactions to HIV infection in asymptomatic homosexual men. *Journal of Psychology & Human Sexuality*. 1989 Aug 7;2(1):93-104. http://dx.doi.org/10.1300/J056v02n01_07.
31. Makoni A, Chemhuru M, Chimbetete C, Gombe N, Bangure D, Tshimanga M. Factors associated with male involvement in the prevention of mother to child transmission of HIV, Midlands Province, Zimbabwe, 2015-a case control study. *BMC public health*. 2016 Dec;16(1):331.
32. Beyene MB, Beyene HB. Predictors of late HIV diagnosis among adult people living with HIV/AIDS who undertake an initial CD4 T cell evaluation, northern Ethiopia: a case-control study. *PloS one*. 2015;10(10). Doi:10.1371/journal.pone.0140004.
34. Schlebusch L, Govender RD. Elevated risk of suicidal ideation in HIV-positive persons. *Depression research and treatment*. 2015;2015. <http://dx.doi.org/10.1155/2015/609172>.
35. World Health Organization. Prevention of mother-to-child transmission (PMTCT). Briefing Note. Geneva: Department of HIV/AIDS. 2007 Oct 1.
36. Patel V, Stein DJ. Common mental disorders in sub-Saharan Africa: The triad of depression, anxiety and somatization. In Akyeampong E, Hill A, & Kleinman A, editors. *The culture of mental illness and psychiatric practice in Africa*. 2015:50-72. Bloomington, IN: Indiana University Press. <http://www.jstor.org/stable/j.ctt16gz69f.6>. Accessed 26 Jun 2019.
37. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *Plos med*. 2006 Nov 28;3(11):e442.
38. Miranda JJ, Patel V. Achieving the Millennium Development Goals: does mental health play a role? *PLoS medicine*. 2005 Oct;2(10). e291.
39. Wang W, Xiao C, Yao X, Yang Y, Yan H, Li S. Psychosocial health and suicidal ideation among people living with HIV/AIDS: A cross-sectional study in Nanjing, China. *PloS one*. 2018;13(2). <https://doi.org/10.1371/journal.pone.0192940>.
40. Govender RD, Schlebusch L. Hopelessness, depression and suicidal ideation in HIV-positive persons. *South African Journal of Psychiatry*. 2012;18(1):16-21. <http://dx.doi.org/10.4102/sajpspsychiatry.v18i1.302>.
41. Collins PY, Holman AR, Freeman MC, Patel V. What is the relevance of mental health to HIV/AIDS care and treatment programs in developing countries? A systematic review. *AIDS (London, England)*. 2006 Aug 1;20(12):1571-82.

42. de-Graft Aikins A. Mental illness and destitution in Ghana: A Social-psychological perspective. In Akyeampong E, Hill AG, & Kleinman AM, editors. *The Culture of Mental Illness and Psychiatric Practice in Africa*. 2015:112-43. Bloomington, IN: Indiana university press. <http://www.jstor.org/stable/j.ctt16gz69f.6> Accessed 26 Jun 2019.
43. Tadios Y, Davey G. Antiretroviral treatment adherence and its correlates in Addis Ababa, Ethiopia. *Ethiopian medical journal*. 2006 Jul;44(3):237-44.
44. Byakika-Tusiime J, Oyugi JH, Tumwikirize WA, Katabira ET, Mugenyi PN, Bangsberg DR. Adherence to HIV antiretroviral therapy in HIV+ Ugandan patients purchasing therapy. *International journal of STD & AIDS*. 2005 Jan 1;16(1):38-41.
45. Abela JR. The hopelessness theory of depression: A test of the diathesis–stress and causal mediation components in third and seventh grade children. *Journal of abnormal child psychology*. 2001 Jun 1;29(3):241-54.
46. Abela JR, Payne AV. A test of the integration of the hopelessness and self-esteem theories of depression in schoolchildren. *Cognitive Therapy and Research*. 2003 Oct 1;27(5):519-35. <https://doi.org/10.1023/A:1026303020478>.
47. Waszczuk MA, Coulson AE, Gregory AM, Eley TC. A longitudinal twin and sibling study of the hopelessness theory of depression in adolescence and young adulthood. *Psychological medicine*. 2016 Jul;46(9):1935-49. <https://doi.org/10.1017/S0033291716000489>.
48. Seligman ME. *Helplessness. On depression, development and death*. 1975. San Francisco: Freeman.
49. Hankin BL, Abramson LY, Siler M. A prospective test of the hopelessness theory of depression in adolescence. *Cognitive Therapy and Research*. 2001 Oct 1;25(5):607-32.
50. Kylmä J, Vehviläinen-Julkunen K, Lähdevirta J. Hope, despair and hopelessness in living with HIV/AIDS: a grounded theory study. *Journal of Advanced Nursing*. 2001 Mar 16;33(6):764-75. <https://doi.org/10.1046/j.1365-2648.2001.01712.x>.
51. Beck AT, Weissman A, Lester D, Trexler L. The measurement of pessimism: the hopelessness scale. *Journal of consulting and clinical psychology*. 1974 Dec;42(6):861-52. GSS. Population and Housing census 2010. Final results. Accra: GSS. 2012.
52. GSS. Population and Housing Report: District Analytical Report 2010, Lower Manya Krobo Municipal. 2014. http://www.statsghana.gov.gh/docfiles/2010_District_Report/Eastern/LOWER%20MANYA%20KROBO.pdf. Accessed 14 Jul 2019.
53. GSS. Population and Housing Report 2010: Regional analytical report, Eastern region. 2013. http://www.statsghana.gov.gh/docfiles/2010phc/2010_PHC_Regional_Analytical_Reports_Eastern_region.pdf. Accessed 14 Jul 2018.
54. Kissi-Abrokwah B, Adu F, Agbesi C, Andoh-Robertson T, Tutu-Danquah C. Women with HIV and AIDS: The Case of Lower Manya Krobo District, Ghana. *Developing Country Studies*. 2015;5(1):47-56.
55. Langmagne S. High HIV/AIDS prevalence in a suburban area in Ghana: A context analysis of its relationship to human trafficking (Doctoral dissertation). University of Saskatchewan, Canada; 2016.
56. Otoo KN, Osei-Boateng C, Asafu-Adjaye P. The labour market in Ghana: A descriptive analysis of the labour market component of the Ghana Living Standards Survey (V). Labour Research and Policy Institute of Ghana Trades Union Congress. 2009. <http://www.ghanatuc.org/The-Labour-Market-in-Ghana.pdf>. Accessed 10 Jan 2018.

57. Boamah NA. Housing affordability in Ghana: a focus on Kumasi and Tamale. *Ethiopian journal of environmental studies and management*. 2010;3(3). doi:10.4314/ejesm.v3i3.63958.
58. Obeng-Odoom F, Amedzro L. Inadequate housing in Ghana. *Urbanistični inštitut Republike Slovenije*, 2011 Jun 1;22(1);127-137. doi:10.5379/urbani-izziv-en-2011-22-01-004.
59. National Catholic Health Service. *St. Martin De Porres, Agomanya, E/R-2010 annual report*. 2010. http://stmartinshospital.org/reports/annual_reports/Annual%20Report%20-%20%202010.pdf. Accessed 4 Apr 2018.
60. Teye-kau M, Tenkorang EY, Adjei PB. Revisiting the Housing–Health Relationship for HIV-Positive Persons: Qualitative Evidence from the Lower Manya Krobo District, Ghana. *Qualitative health research*. 2018 Jul;28(8):1217-28. DOI: 10.1177/1049732318764646.
61. La Ferrara E. Descent rules and strategic transfers. Evidence from matrilineal groups in Ghana. *Journal of Development Economics*. 2007 Jul 1;83(2):280-301.
62. Sedziafa AP, Tenkorang EY, Owusu AY. "... he always slaps me on my ears": the health consequences of intimate partner violence among a group of patrilineal women in Ghana. *Culture, health & sexuality*. 2016 Dec 1;18(12):1379-92. <http://dx.doi.org/10.1080/13691058.2016.1187291>.
63. Owusu GA. Graying of the developing world: Emerging policy issues. *Legon Journal of International Affairs*. 2007;4(1):1-25.
64. Yin RK. *Case Study Research: Design and Methods*. Thousand Oaks, CA: SAGE. 2013;14(1):69-71.
65. Baxter P, Jack S. Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*. 2008 Dec 1;13(4):544-59.
66. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field methods*. 2006 Feb;18(1):59-82.
67. Mason M. Sample size and saturation in PhD studies using qualitative interviews. In *Forum qualitative Sozialforschung/Forum: qualitative social research* 2010 Aug 24;11(3).
68. Owusu, A. Y. (2020). A gendered analysis of living with HIV/aids in the eastern region of Ghana. *BMC Public Health*. 2020 May 24; 20:751. DOI: 10.1186/s12889-020-08702-9.
69. QSR International. *NVivo Professional Version 11*. Boston: Author. 2015.
70. Babbie ER. *The practice of social research* (13th ed.). Scarborough, Ontario, Canada: Wadsworth/Cengage Learning;2013.
71. Anderson M, Elam G, Gerver S, Solarin I, Fenton K, Easterbrook P. "It took a piece of me": Initial responses to a positive HIV diagnosis by Caribbean people in the UK. *AIDS care*. 2010 Dec 1;22(12):1493-8. <https://doi.org/10.1080/09540121.2010.482125>.
72. Simbayi LC, Kalichman SC, Strebel A, Cloete A, Henda N, Mqeketo A. Disclosure of HIV status to sex partners and sexual risk behaviours among HIV-positive men and women, Cape Town, South Africa. *Sexually transmitted infections*. 2007 Feb 1;83(1):29-34.
73. Hult JR, Maurer SA, Moskowitz JT. "I'm sorry, you're positive": a qualitative study of individual experiences of testing positive for HIV. *AIDS care*. 2009 Feb 1;21(2):185-8. <http://doi.org/10.1080/09540120802017602>.
74. Baumgartner LM, David KN. Accepting being poz: The incorporation of the HIV identity into the self. *Qualitative Health Research*. 2009 Dec;19(12):1730-43. <https://doi.org/10.1177/1049732309352907>.

75. NAP+, GAC and UNAIDS. Persons living with HIV Stigma Index Study, Ghana. Revised report. Accra, Ghana, NAP+, GAC and UNAIDS.2014.
<http://www.stigmaindex.org/sites/default/files/reports/GHANA%20Stigma%20Index%20report%202014.pdf>. Accessed 4 Apr 2016.
76. Badaru UM, Ogwumike OO, Adeniyi AF, Nelson EE. Determinants of caregiving burden and quality of life of informal caregivers of African stroke survivors: literature review. *International Journal on Disability and Human Development*. 2017 Aug 28;16(3):249-58. <https://doi.org/10.1515/ijdh-2016-0041>.
77. Peirce A. The Emotional Impact of an HIV Diagnosis. 2017. <https://www.everydayhealth.com/hiv-aids/hiv-diagnosis-emotional-impact.aspx>. Accessed 2 May 2018.
78. GAC. National HIV & AIDS Strategic Plan 2016-2020.
2016. <http://www.ghanais.gov.gh/gac1/pubs/COMPREHENSIVE%20NSP%202016-2020.pdf>. Accessed 17 May 2020.
80. Owusu AY, Amofo ME, Asante KT. Current HIV/AIDS Status, Access to Antiretroviral Treatment, and HIV-Related Stigma in Ghana. Policy brief. 2020. ISSER, Legon: Unpublished.

Tables

Table 1: First reactions of PLWHAs after maiden news of HIV diagnosis

Respondent number	First reaction	Classification of first reaction
1	I became very worried and did not even know what to do. I even wanted to kill myself.	Negative
2	When I heard it I was devastated and very worried.	
3	I was very frustrated and worried when I was told; in fact I cried.	
4	It was very hard for me when I first heard it; in fact I cried and cried.	
5	It worried me very much; in fact I was very frustrated. I even decided to take poison so that I will die before my sickness becomes worse.	
6	In fact I was heartbroken and I did not believe the nurses...The doctor...I didn't believe him. He gave me a report to take to the hospital but I threw the paper away because I didn't believe what he told me.	
7	I was very surprised and shocked when I was first told I had this disease. It was very heartbreaking.	
8	I was very worried at first.	
9	In fact I was disturbed initially.	
10	I was disturbed but because they have drugs to treat it I was OK.	
11	I was disturbed, I was worried	
12	I was really worried and disturbed.	
13	It has been a very bad experience...people may think when you have HIV it is promiscuity.	
14	I was disturbed, the first day I was told, I was greatly disturbed....I was greatly disturbed and I said I will kill myself... I was always crying.	
15	I was really disturbed. That day I cried.	
16	When I was first diagnosed with HIV and was told I had HIV, I decided to break up with my wife because I was confused... It wasn't easy... it wasn't easy at all... I felt so bad, I felt very, very bad.	
17	Oh, I was worried but didn't say anything.	
18	I was disturbed. I had to be disturbed because I didn't expect it. I was disturbed.	
19	I was initially frightened that I would die because when you are told that you have this you would think that you were going to die.	
20	It seemed to be untrue.	
21	I was scared when I was told that I had the disease, so I did not want to be with anyone.	
22	I can't tell because I was ill for a long time so when I was told about it I only continued to take medications.	Resigned:
23	I didn't really do anything, as for sickness, its sickness so I didn't really do anything.	Neutral
24	I accepted the result.	Resigned:
25	When I was told I was not perturbed because I knew people who were also taking the drug.	Acceptance
26	There was nothing I could do about it.	

Source: Author's fieldwork, 2015

Figures

Figure 1

Data analysis workflow From: Immediate reactions of newly-diagnosed HIV-positive persons to the initial news of being HIV-positive: Implications for public health

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [InterviewguideHousingforPLHIVAugust2014.docx](#)