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Quality of Life, Optimism/Pessimism, and Knowledge and Attitudes toward HIV Screening among Pregnant Women in Ghana

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Abstract

Objective—To explore optimism/pessimism, knowledge of HIV, and attitudes toward HIV screening and treatment among Ghanaian pregnant women.

Method—Pregnant women in Accra, Ghana completed a self-administered questionnaire including the Life Orientation Test – Revised (LOT-R, an optimism/pessimism measure), an HIV knowledge

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and screening attitudes questionnaire, the Short Form 12 (SF-12, a measure of health-related quality of life (HRQOL)), and a demographic questionnaire. Data were analyzed using t-tests, ANOVA, correlations, chi-square.

Result—N=101, 28% nulliparous; 31.8 mean weeks gestation, 29.7 mean age. 100% had heard of AIDS, 27.7% had been tested for HIV before this pregnancy, 46.5% had been tested during this pregnancy, and 59.4% of the sample had ever been tested for HIV. Of those not tested during this pregnancy, 64.2% were willing to be tested. Of all respondents, 89% said they would get tested if ARVs were readily available and might prevent maternal-to-child transmission. Neither optimism/pessimism nor HRQOL was associated with attitudes toward HIV screening. Optimism was negatively correlated with HIV knowledge ($p=.001$) and was positively correlated with having never been tested prior to this pregnancy ($p=.007$).

Conclusion—The relationship between optimism/pessimism and HIV knowledge and screening behavior is worthy of further study using larger samples and objective measures of testing beyond self-report.

Keywords

Quality of life; mental health; pregnancy; HIV screening; optimism; pessimism

Introduction

The concepts of optimism and pessimism – or how an individual generalizes positive and negative experiences to predict future outcomes – have been under study by psychologists and psychiatrists for at least two decades. (Scheier & Carver, 1985; Wiebe & Smith, 1997; Peterson and Seligman, 1984; Peterson et al., 1988) However, it has only been in recent years that health researchers have begun to explore the link between cognitive predispositions like optimism/pessimism and factors such as perceived health-related quality of life (HRQOL), behavioral intentions, health behaviors, and health outcomes. And despite a few studies addressing the relationship between optimism/pessimism and HIV screening, (Brown et al., 2001; Goodman et al., 1995; Perkins et al., 1993) no published research to date has been conducted among pregnant women in Africa. The results of such research could prove especially interesting given the likelihood – given access to antiretrovirals (ARVs) – of preventing maternal-fetal transmission of HIV if the mother's sero-status is known at the time of delivery.

There are an estimated 270,000 – 380,000 people living with HIV in Ghana, a country with approximately 22 million residents. (Unicef, 2007) The estimated HIV prevalence is 2.3 percent for adults over age 15, and 3.9 percent for young pregnant women (ages 15–24 years) in the capital city of Accra (Unicef, 2007). As many as 13.4% of pregnant women in some rural areas have tested positive for HIV (National AIDS/STI Control Programme, 2000), however, many Ghanaians may not know their HIV status and statistics may underrepresent the true burden of HIV in Ghana. (Aggor, 2006) Although access to health care services varies widely from the rural regions in the north of Ghana to the capital city in the south, the government has made a concerted effort to address access issues with regard to HIV/AIDS treatment. The National AIDS Control Program and the Ghana AIDS Commission work to coordinate and mobilize HIV-related resources. As of 2004, there were 29 voluntary counseling and testing centers, 19 prevention of mother-to-child transmission sites, and 4 anti-retroviral (ARV) therapy sites providing ARV medications to people living with HIV/AIDS. Uptake is inconsistent, but large private and government subsidies make treatment available to patients at \$5 to \$10 a month. There are also several nationwide efforts underway to expand ARV utilization.

In this context, identifying correlates to screening behavior and attitudes toward ARV treatment is becoming increasingly important. Studies have documented a link between positive attitudes toward HIV screening and actually getting tested, including a study conducted in four countries in Africa (Nigeria, South Africa, Uganda, and Zimbabwe). (Peltzer et al., 2002) Yet previous studies of optimism/pessimism have been contradictory in their implications for HIV risk and screening. One study of HIV-negative gay men reported that optimists reported having fewer anonymous sexual partners than did pessimists. (Taylor et al., 1992) In another study looking at the intentions of sexually active inner city, minority adolescents, optimists reported stronger intentions of avoiding unsafe sex. (Carvajal, et al., 1998) However, in a study of adolescent girls at risk for HIV, those scoring higher in optimism were less likely to expose themselves to information about HIV testing and were less likely to follow through with an actual test than were those who scored lower in optimism. (Goodman et al., 1995)

Previous research suggests that optimism/pessimism may also affect how people assess their health-related quality of life – independent of their true health status. In a study of chronic hepatitis C patients (Moyer et al., 2000; Moyer et al., 2003), researchers found that even when health status was controlled, pessimists had decidedly worse HRQOL scores than optimists or so-called “realists” (those with the most accurate understanding of the implications of chronic hepatitis C). Interestingly, optimists’ HRQOL scores closely mirrored the scores of the general U.S. population, despite their chronic hepatitis C. This is especially noteworthy since numerous studies have shown chronic hepatitis C patients to have significantly lower QOL than the general population – even when other factors are controlled in statistical analysis. This raises significant questions about the potentially protective effects of optimism vs. the deleterious effects of pessimism.

This study addresses several of the questions raised by the literature surrounding optimism/pessimism, health-related quality of life, and their potential relationship to HIV screening. This study builds on an existing collaborative study underway in West Africa to explore the role that optimism/pessimism plays among Ghanaian pregnant women.

Research Questions

1. Are there socioeconomic, demographic, or health-related variables that are associated with optimism/pessimism and health-related quality of life among Ghanaian pregnant women?
2. How does optimism/pessimism relate to knowledge of HIV, previous testing behavior, attitudes toward HIV screening, and attitudes toward ARV treatment in this population?

Methods

This study was a cross-sectional assessment of Ghanaian pregnant women presenting for prenatal care at the Obstetrics and Gynecology Clinic at the Nogouchi Research Institute/ Medical School at the University of Ghana in Accra, Ghana. The clinic is housed in a public hospital that is also the largest government hospital in Ghana. Patients from all over Ghana travel to this clinic to receive their care.

Women were recruited as part of a larger study that grew out of a long-standing collaboration among Ghanaian, United Kingdom, and United States counterparts. (Klufio et al., 2003) Women were asked to participate in an hour-long interview that included a battery of survey instruments while they waited for their appointment. On randomly selected days, the specific instruments for each study were alternately included in the overall battery of instruments being administered.

All survey instruments were pilot tested in focus groups of Ghanaian pregnant women prior to the onset of this study. Individual items and response options that were problematic were revised and re-tested to ensure maximum validity of data collection. In addition, all instruments were translated into the most commonly used local dialects (Akan and Ga) for those patients who do not speak English, and then back-translated to ensure comparability. English is the national language in Ghana, yet many patients are more comfortable speaking in their local dialect. Thus the researchers included non-English language instruments as an option for data collection.

Instruments for this study included the Life Orientation Test – Revised (LOT-R, an optimism/pessimism measure), the Short Form 12 (SF-12, an HRQOL measure), a survey on HIV knowledge, attitudes toward HIV screening and anti-retroviral therapy, and self-reported HIV testing, and a demographic questionnaire.

The Life Orientation Test – Revised (LOT-R) (Scheier et al., 1994) is a revision of the original Life Orientation Test (Scheier & Carver, 1985), devised to determine individual differences in optimism/pessimism. This instrument has been validated in at least five countries (United States (Scheier & Carver, 1985), Brazil (Bandeira et al., 2002), Germany (Herzberg et al., 2006), Norway (Schou et al., 2004), and China (Lai and Yue, 2000)) and has been shown to have high reliability among pregnant women. (Killingsworth-Rini et al., 1999; Terrill et al., 2002; Scheier and Carver, 1985) Its 10 items generate an overall optimism score, as well as two possible subscales: affirmation of optimism and affirmation of pessimism. Each item is rated on a 5-point Likert scale from strongly agree to strongly disagree. All items summed together (after removing the fillers and reversing the scores on the pessimism items) create the overall optimism score. This overall score treats pessimism as the opposite of optimism, and reflects a respondent's overall dispositional optimism. The items reflecting optimism (such as, "In uncertain times I usually expect the best,") can be summed to create the optimism subscale. The items reflecting pessimism (such as, "If something can go wrong for me, it will", or "I rarely count on good things happening to me") can be summed to create a pessimism subscale. In this way, the subscales can be used to examine optimism and pessimism as separate constructs. No official "cut scores" have been developed for the LOT-R (Nelson et al., 2003), and typical analysis involves treating the summary score and subscale scores as separate continuous variables. Thus a high optimism subscale score does not necessarily mean a low pessimism subscale score. Although data on optimism/pessimism among African populations is limited, the LOT-R has been used successfully in at least one study of Ghanaian college students. (Eshun, 1999)

An **HIV knowledge and test acceptance instrument**, designed to assess women's knowledge of HIV, attitudes toward HIV screening and treatment, and perceived risk of getting infected. The instrument was based on items from Family Health International's Behavioral Surveillance Surveys as well as other validated instruments available at the Population Council's AIDSQuest website. (AIDSQuest, 2007) Although these instruments have been used widely in Africa, no previous studies to our knowledge have used these measures among Ghanaian pregnant women. The final instrument used in this study contained 7 questions addressing women's knowledge about HIV, 6 items pertaining to women's thoughts about getting an HIV test and self-reported HIV testing both ever and during the current pregnancy, 2 questions about ARV treatment acceptance, as well as 6 items addressing perceived risk of infection. The 7 knowledge items were summed to create an overall HIV knowledge score.

Knowledge questions assessed understanding of risk of transmission, including whether one could get HIV from a mosquito, from sharing food, or from witchcraft, as well as an understanding of the role of sex with multiple partners and the use of condoms in getting or preventing HIV transmission. Test acceptance items included general questions about previous

testing behavior without asking for the results of those tests, and ARV acceptance items asked women whether they would get tested if they knew ARVs were available and affordable in Accra. Finally, items addressing perceived risk of infection included questions such as how many people in their community did they think had HIV, what level of risk they thought they might have of getting HIV in the next 12 months, what level of risk they thought their partner might have of getting HIV in the next 12 months, and whether they might be able to convince their partner to get tested.

The **Short Form 12, or SF-12**, (Ware et al., 1996) is a 12-item quality of life instrument derived from the Short Form 36, or SF-36, an instrument used and validated around the world to determine self-assessed health-related quality of life (HRQOL). The SF-36 – as well as the shortened SF-12 – generates not only summary scales of mental and physical functioning (MCS and PCS), but it also generates a profile of patients' HRQOL across eight domains: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (V), social functioning (SF), role emotional (RE), and mental health (MH). Physical functioning (PF) addresses such areas as ability to care for oneself, walk various distances, and participate in various levels of activity. Role physical (RP) reflects the degree to which a respondent's physical health has impacted their ability to carry out their normal everyday duties. Bodily pain (BP) reflects the presence of pain as well as the degree to which it interferes with respondents' lives. General health (GH) reflects a respondent's overall assessment of their health status. Vitality (VT) reflects the amount of energy a respondent perceives themselves to have. Social functioning (SF) represents the degree to which a respondent's health interferes with social activities. Role emotional (RE) refers to the degree to which a respondent's emotional health affects their ability to carry out their normal activities. Mental health (MH) reflects a respondent's rating of the frequency of positive and negative affective states. The Physical Health Summary Score (PCS) is calculated based on a combination of physical functioning, role physical, bodily pain and general health scores. The Mental Health Summary Score (MCS) is calculated based on a combination of vitality, social functioning, role emotional, and mental health scores.

According to SF-36 developers, 12 of the original SF-36 items accounted for at least 90% of the variance in PCS-36 and MCS-36 in both general and patient populations, and those same 12 items reproduced the profile of the eight SF-36 health concepts sufficiently for studies in which the length of the instrument may be prohibitive. (Ware et al., 1996; Ware et al., 2005) In addition, the SF-36 family of instruments has been translated, back translated, and cross-culturally validated in more than 40 different countries, including South Africa and Tanzania. (IQOLA, 2007) Although there has not been published validation work in Ghana, the track record of validation in other parts of Africa as well as our own pilot testing to ensure comprehension, comparability, and face validity indicated that the SF-12 could be a useful measure of quality of life in this population.

The **Demographic Questionnaire** is a study-specific instrument designed to determine basic patient characteristics that might be associated with optimism, pessimism, HRQOL, or pregnancy outcomes. This instrument was developed based on previous literature (Moyer et al., 2000; Moyer et al., 2003; Chang, 2002; Ware et al., 1996; Ware et al., 2005) as well as review by practicing clinicians. The variables assessed include age, number of pregnancies, other medical conditions, previous treatment for mental health problems such as depressed mood or anxiety, previous use of anti-depressants for premenstrual dysphoric disorder, and self-perceived health status. Mental health variables were assessed to help us to differentiate between mental health issues and pessimism, concepts that can be intimately linked. (Chang, 1996) It is worth noting that Ghanaian women may see one of the 45,000 traditional healers or 488 medical or counseling personnel in Ghana to address emotional health issues. (WHO, 2003)

All women presenting for prenatal care were approached by trained research assistants with translators, if necessary. To be eligible to participate, women needed to be 18 years of age or older, pregnant, and not facing an imminent health crisis. The research was explained to each participant, and those who agreed to participate signed a consent form that had been approved by the Institutional Review Boards at the University of Michigan and the Noguchi Memorial Institute for Medical Research at the University of Ghana. The research assistant and translator then interviewed each respondent for an average of one hour, marking her responses on paper copies of the instrument. Each respondent was assigned a unique ID number, which was marked at the top of her completed interview. No other identifying information was recorded.

All data were entered into an Excel spreadsheet and cleaned. LOT-R and SF-12 scores were calculated using standard instrument scoring algorithms. Data were then imported into SPSS statistical software (SPSS Inc, Chicago, IL) for analysis. Frequencies and basic descriptive statistics were calculated for all variables, including cross tabs to determine potential relationships between key variables. Student's T-tests were used to compare means on continuous variables, and the chi-square test was used to examine categorical data. Correlations were conducted to examine the relationship between two continuous variables, such as SF-12 subscale scores and LOT-R scores. Analysis of variance with post-hoc pairwise comparisons was used to compare multiple means on HRQOL subscales.

A p value of .01 was taken as statistically significant for analysis regarding the LOT-R, HIV-related variables, and demographic variables. Because each analysis of the SF-12 involves eight subscales, an alpha of .006 was chosen to define statistical significance regarding the SF-12, based on the Bonferroni adjustment for multiple comparisons. (Matthews et al., 1988)

Results

Data were collected on 101 pregnant women. Patient demographics are given in Table 1, and HIV-related variables are described in Table 2. In summary, this was a group of women who were likely to be married, work for pay, have had at least one previous pregnancy and delivery, and were in their third trimester of pregnancy. They were also well-educated, with 36 percent having gone beyond secondary education. With regard to HIV, they were knowledgeable, with 100 percent having heard of HIV, 51.3 percent obtaining a perfect HIV knowledge score, and three-quarters obtaining greater than 85 percent on a test of HIV knowledge. Slightly more than half had ever been tested, and the vast majority felt as though they were at no or little risk of being infected with HIV.

Optimism/Pessimism

Overall mean LOT-R scores were 15.6 ($\pm$ 3.8 SD, R: 8–24). Mean subscale scores were 11.0 ($\pm$ 1.4 SD, R: 7–12) for optimism and 7.3 ($\pm$ 3.7 SD, R: 0–12) for pessimism. Overall LOT-R scores were associated with currently seeing a doctor or other health care provider for emotional issues ($p=.001$), with those seeing a health-care professional being less optimistic than those not. (mean 12.8 vs 16.1). LOT-R scores were not significantly associated with any other demographic or health-related variable, including age, marital status, pregnancy complications, self-rated “difficulty” of the pregnancy, or ongoing comorbid conditions.

When examined by quartile, those with the lowest overall optimism scores were significantly more likely to report being under the care of a health care provider for emotional problems ($p=.01$). In addition, those in the lowest overall LOT-R quartile had delivered more babies than women in the highest quartile ($p=0.01$). Those with the highest overall optimism scores were more likely to have a higher level of education ($p=.01$).

In subscale analysis, pessimism subscale scores did not significantly correlate with optimism subscale scores ($r=.128$, $p=.205$ (NS)). Thus women with the highest pessimism subscale scores were not necessarily the same women with the lowest optimism scores. Conversely, those who were most optimistic were not necessarily the least pessimistic.

Knowledge of HIV and acceptance of HIV screening

Overall optimism and the LOT-R pessimism subscale were both correlated with HIV knowledge at $p=.001$. ($R = -.383$ for overall LOT-R; $R=.365$ for pessimism subscale) This indicates that the more optimistic (and less pessimistic) a woman was, the less she knew about HIV. Optimism/pessimism was not related to a woman's perceived risk of acquiring HIV, whether she had been tested for HIV during this pregnancy, whether she would be willing to be tested for HIV, or whether she would be willing to accept ARV treatment if necessary. However, the optimism subscale of the LOT-R was significantly associated with the variable "tested for HIV before this pregnancy." Those women who reported *NOT* being tested prior to this pregnancy were slightly more optimistic than those who reported being tested in the past ($p=0.007$).

Perceived risk of acquiring HIV was significantly associated with a woman's perceived risk of her partner getting HIV ($p<.001$). Perceived risk of acquiring HIV was not associated with any other socio-demographic or health-related variable.

When asked if a woman thought she might be able to convince her partner to get an HIV test, the Role Emotional subscale of the SF-12 significantly divided the group. Those who said they would not be able to convince their partner to get an HIV test had significantly lower RE scores than those who said they could convince their partner to be tested ($p<.001$).

HRQOL

Quality of life – as measured across the 8 subscales and 2 summary scores of the SF-12 - did not significantly correlate with optimism/pessimism as assessed by the LOT-R. The data did suggest a trend toward lower quality of life scores among women with the lowest LOT-R scores, but results were not statistically significant. The physical health summary scale of the SF-12 (PCS) was significantly associated with reporting ongoing health issues ($p=.001$), with those respondents with lower physical health summary scores being more likely to report ongoing health issues such as heart trouble, lung problems, gastrointestinal issues, diabetes or other ailments requiring a doctor's care. In addition, reporting pregnancy complications was associated with a trend toward lower physical functioning ($p=.01$).

The vitality subscale was negatively correlated with number of weeks gestation ($r = -.229$, $p=.03$), the general health subscale was negatively correlated with the overall assessment of how easy the pregnancy was ($r = -.227$, $p = .023$), and the role physical subscale was negatively correlated with the number of times a woman had been pregnant ($r = -.217$, $p = .03$). But none of these associations met our strict criteria for significance.

Discussion

Optimism/pessimism was not significantly associated with basic demographic characteristics, self-rated health status, quality of life, or HIV test acceptance among the Ghanaian pregnant women in our sample. This is noteworthy given previous studies that showed a direct linear relationship between optimism/pessimism and HRQOL among patients in the United States. (Moyer et al., 2003; Schou et al., 2005)

Optimism scores in this sample did correlate with having been tested for HIV before this pregnancy ($p=.007$) and HIV knowledge ($p=.001$). Interestingly, those who were not tested

before this pregnancy and had the least knowledge of HIV were the most optimistic. This raises questions of whether optimism is, in fact, denial or lack of understanding of potential risks. In the case of not being tested prior to this pregnancy, one could argue that optimism might help women make better decisions about their behavior and prevent them from putting themselves at risk of HIV – thus reducing their perceived need to get tested. Scheier argues that perhaps optimists go to greater lengths than pessimists to verify their partner's HIV status, thus knowing they themselves were at a lower risk. (Scheier et al., 2002) However, it is equally possible that optimism is a product of – or at least associated with – ignorance of the true risks of HIV.

It is worth noting that optimism/pessimism was not related to a woman's perceived risk of acquiring HIV. However, 93% of our sample said they had no or small risk of getting HIV. It is possible that with a larger sample size we might have detected an association between optimism/pessimism and perceived HIV risk.

Another interesting finding in these data is that women with the highest pessimism subscale scores were not necessarily the same women who had the lowest optimism scores. Conversely, those who were most optimistic were not necessarily the least pessimistic. This lends credence to the LOT-R creators' assertion that optimism and pessimism can be seen as two separate constructs, rather than as one construct along a continuum.

Optimism/pessimism did appear to be related to current treatment for emotional issues ($p=.001$). While this could be taken to mean that optimism/pessimism is just a proxy for mental health issues, several factors suggest that such an interpretation would be inaccurate. First, the pessimism subscale of the LOT-R did not significantly correlate with any of the mental health-related variables assessed, and it is most likely that pessimism would be linked with mental health issues rather than optimism. In addition, neither the overall LOT-R nor its pessimism subscale was associated with the SF-12 mental health subscale or the mental health summary score. If optimism/pessimism were a proxy for mental health issues, clearly mental health-related quality of life ought to parallel LOT-R scores. This study suggests that at least among this sample of Ghanaian pregnant women, optimism/pessimism is a separate construct than mental health.

With regard to quality of life, this study showed some expected results. Data suggest that the Ghanaian women in our sample had lower vitality scores the farther along they were in their pregnancies, lower general health scores if they reported having difficult pregnancies, and lower role physical scores if they had been pregnant previously. Yet to put these numbers into perspective, when compared to published data regarding pregnancy and health-related quality of life using the SF-36, Ghanaian women in this study report much better general health and vitality and less bodily pain than pregnant women in the United States. (Hueston & Kasik-Miller, 1998; Larrabee et al., 1996; McKee et al., 2001) These published data reflect samples of general U.S. pregnant women (Hueston & Kasik-Miller, 1998), HIV negative pregnant women in the U.S. (Larrabee et al., 1996), and low-income, minority women in late pregnancy (McKee et al., 2001). When data from the Ghanaian women in this study were compared to these U.S.-based studies, ANOVA indicated significant differences among groups on all subscales at $p<.001$, but post-hoc pairwise comparisons indicate that Ghanaian scores were significantly higher for BP, GH, and VT, and significantly lower for RE. Note that the mental health subscale scores do not differ.

As mentioned, there are no established “cut points” for optimism as measured by the LOT-R. Yet the scores from our sample did appear to be better than the scores published in the literature of U.S. women. Compared to a similarly aged sample of U.S. women, (Scheier et al., 1994) the Ghanaian women in our sample were significantly more optimistic ($p=.004$). This is

consistent with previous findings indicating that Ghanaian college students are more optimistic than American college students. (Eshun, 1999)

Although cross-cultural comparisons were not the focus of our inquiry, these comparisons do help provide valuable context in which to view our findings. Taken together, it appears that our sample of Ghanaian women was more optimistic and had better quality of life than several cohorts of pregnant women in the United States as published in the research literature. If these results are borne out in subsequent studies with larger sample sizes and a matched cohort design, they raise many interesting questions about why such differences may exist.

Limitations

There are several limitations to this study worth discussing. First, the use of the LOT-R has not been validated for use among Ghanaian pregnant women. However, the instrument has been used previously in Ghana (Eshun, 1999) and it was carefully pretested in this population for comprehension prior to study implementation. Our focus groups and pilot testing did not indicate any difficulties in interpretation of these items. Nonetheless, the instrument would benefit from a more rigorous validation study in this population. Similarly, although the SF-12 has been used all over the world and translated into dozens of languages, the research literature does not indicate it has been validated in Ghana. Nonetheless, focus group data suggest that respondents did not have trouble responding or comprehending the intent of the questions.

Another limitation is that comparison data for pregnant women was unavailable for the SF-12, so the comparisons referred to above were made using data collected with the SF-36. The SF-12 is a subset of the SF-36 and has demonstrated significant correlation with the SF-36, thus comparing results from the two instruments is unlikely to yield significantly different results than comparisons using identical instruments.

Another limitation is that the sample drawn in this study was largely one of convenience. All women presenting to the clinic were asked to participate, and it is possible that the women presenting on the days in which these study instruments were administered were in some way different from the larger population of pregnant women in Ghana. The clinic in which this study was conducted reflects a broad range of women in Ghana, but future studies would benefit from a design that includes random selection.

Another limitation of this study is that the only data available on HIV testing behavior is self-report data. There was no attempt to verify whether women had indeed been tested in the past or tested during this pregnancy. This study also did not include questions about women's partner's HIV status. If women knew their partner was HIV negative, for instance, they might be less inclined to be tested. We had no way to determine if that was the case.

This study also did not collect data regarding whether women were previously tested for HIV as part of prenatal care for a previous pregnancy. Thus it is difficult to interpret the findings that 1) women who had been previously tested for HIV appeared to be less optimistic than those who had not been tested, and 2) women with greater parity had lower optimism. It is possible that women who have had previous children have also visited prenatal clinics and been more likely to receive an HIV test. Future research needs to explore the relationship between parity, prenatal care, HIV testing, and optimism/pessimism.

This study also included questions that were rather hypothetical in nature. For example, respondents were asked if ARVs were available, would they get tested? And if they tested positive for HIV, would they take ARVs? It is very easy to answer "yes" to such questions when there are no consequences associated with doing so. While "intention" may be the closest measurable variable to "action", it is not the same thing. Future research needs to solidify the

relationship between intention and action in this population regarding acceptance of HIV testing and treatment.

The final limitation to this study is that, despite standardized written scripts, it is impossible to quantify the potential impact that the interviewers and translators may have had on the women's responses. Although data analysis showed no differences in responses by interviewer, it is unclear whether the presence of interviewers may have caused women to respond more positively due to social desirability bias. Given that nearly one-fifth reported ever being treated for mental health issues and 59% reported having had an HIV test, it appears unlikely that social desirability bias had an undue effect on the data. However, reliable national data regarding mental health treatment and percentage of pregnant women who have been tested for HIV is not available for comparison.

Potential Implications

This study has several important implications. The first is that more research needs to be done to elucidate the true relationship between optimism/pessimism and HIV knowledge and future screening behavior. Are optimists in denial? Or are optimists protecting themselves from HIV and therefore not concerning themselves with factual details about its transmission or getting tested? Are pessimists actually better off when it comes to HIV screening by preparing for the worst? Future research needs to address these questions.

The second is that given our data's suggestion that the Ghanaian women in our sample are more optimistic and have better perceptions of their general health, bodily pain, and vitality than U.S. women, further research is warranted to discern some of the causative agents behind these differences. It also raises questions about cultural norms and how they might translate to better emotional and physical well-being.

A vital next step is determining whether differences in emotional well being and optimism during pregnancy translate to measurable differences in actual HIV screening and/or acceptance of ARVs within the larger population of Ghanaian women. Future research needs to be longitudinal in nature, include objective clinical data, and include larger sample sizes.

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Table 1

Patient Demographics (N=101)

Variable	Mean, $\pm$ SD (Range)
Maternal Age (years)	29.7, $\pm$ 4.8 (18, 42)
Weeks gestation	31.78, $\pm$ 7.6 (11, 43)
Number of Pregnancies (including current)	2.42, $\pm$ 1.28 (1,6)
Previous deliveries	1.03, $\pm$ 1.02 (0,4)
	Percent
Highest level of education	6.2; primary 27.8; middle 29.9; secondary 36.1; beyond secondary
Work for money	86.1
Married	93.1
Nulliparous	28.0
Ongoing health issues	20.8
Pregnancy complications	15.0
Ever seen doctor/counselor for emotional problems	19.0
Ever taken prescription medication for emotional problems	15.8

Table 2

HIV-related variables

Variable	Percent
Heard of HIV/AIDS	100.0
Perfect HIV knowledge score	51.3
>85% correct HIV score	76.3
Tested for HIV before this pregnancy	27.7
Tested for HIV during this pregnancy	46.5
Total % ever tested for HIV	59.4
Of those not tested during current pregnancy, % willing to get tested if test were offered	64.2
If ARVs were readily available, % of all respondents who would get tested	89.0
% of all respondents who would accept ARV treatment if necessary	96.0
Perceived Risk of Getting HIV	No risk: 62.0 Small risk: 31.0 Moderate or great risk: 6.0 Don't know: 1.0
Perceived Risk of Partner Getting HIV	No risk: 62.2 Small risk: 28.6 Moderate or great risk: 3.0 Don't know: 6.1