

Psychosocial and behavioural correlates of HIV risk perception among workers of Mukete Estates Limited, Meme Division, Southwest region of Cameroon

Abstract

Background: The commercial agricultural sector of Cameroon is facing severe social and economic crisis due to the impact of HIV/AIDS. In spite of this situation, workers do not perceive HIV as a threat. Therefore, we conducted this study aimed at investigating the psychosocial and behavioural correlates of HIV risk perception among workers of Mukete Estates Limited, Cameroon. **Methods:** A cross-sectional study was conducted in June 2015 among 208 respondents selected using a cluster sampling. A questionnaire was administered to ascertain socio-demographic characteristics, bahavioural and psychosocial characteristics, and perception of risk of contracting HIV using the health belief Model (HBM). Binomial logistic regression was computed to ascertain the correlates of risk perception using the Statistical Package for Social Sciences (SPSS) version 20 software program at the level 0.05. **Results:** Up to 94.2% perceive that HIV/AIDS really exists and 66.7% that a healthy looking person can be HIV positive (perceived susceptibility); 84.6% of the respondents perceived that HIV/AIDS is a serious and deadly disease (perceived severity); 65.8% of the respondents perceived that correct and consistent use of the condom can prevent sexual transmission of HIV/AIDS (perceived benefit); 74.1% perceived that they feel embarrassed to buy condoms (perceived barriers); 69.2% perceived that they could refuse sex with their partners if they refuse to use condoms (perceived self-efficacy); 96.1% reported having experienced sex, and of these, 49.0% reported having had multiple sexual partners, and 31.5% reported having multiple concurrent sexual partners. Those who ever used condom represented 65.0%, among them 23% used the condom always. Are at higher odds of perceiving themselves at risk of contracting HIV: Muslims [OR=2.844 (95% CI 1.213-6.666], workers who perceived that HIV/AIDS really exist [OR=3.789 (95% CI 1.352-10.619)], that a healthy looking person can be HIV positive [OR=4.100 (95% CI 1.200-14.005)], that they have the confidence they could refuse sex with their partners if they refused to use condoms [OR=5.273 (95% CI 1.475-18.855)]. On the other hand, workers who perceived that they feel embarrassed to buy condoms are at lower odds of risk perception of contracting HIV/AIDS [: OR=0.296 (95% CI 0.112-0.780)]. **Conclusion:** Three components of the HBM with high significance (perceived susceptibility, perceived barriers and perceived self-efficacy) and religion should be considered in designing policies and intervention programmes geared towards increasing HIV risk perception among workers of MEL, Cameroon.

Key words: Behavioural and psychosocial correlates, HIV risk perception, Health Belief Model (HBM), Agricultural workers, Cameroon

1. INTRODUCTION

The Acquired Immune Deficiency Syndrome (AIDS) remains a life-threatening

46 condition without any cure [1]. Hence, only effective preventive measures can curb
47 this pandemic, especially if these are adopted and maintained by workers, such as
48 those of the agro-estates.

49

50 The commercial agricultural sector of Cameroon is facing severe social and
51 economic crisis due to the impact of HIV/AIDS. This sub-sector is vulnerable to
52 HIV due to its high dependence on human labour. Protracted morbidity and
53 mortality are costing the industry financially, economically, and socially (including
54 loss of skilled and experienced labour) [2]. The sub-sector's vulnerability to the
55 epidemic thus stems largely from vulnerabilities faced by workers employed in
56 commercial agriculture. Research has shown that vulnerability of workers in
57 commercial agriculture is rooted in the nature of work, which tends to be casual
58 employment and largely based on migrant labour. In addition, poor living and
59 working conditions on farms, coupled with limited access to health services and
60 information about HIV increase vulnerability [2-5]. For agro-estates to remain
61 viable businesses, it is necessary and urgent to approach the epidemic with the
62 seriousness it deserves. This includes comprehensive prevention programmes and
63 concerted mitigation strategies at company level.

64

65 Cameroon has one of the highest HIV/AIDS prevalence in the west and central
66 African sub-region of 4.3%, which translates to 610,000 inhabitants [6]. HIV/AIDS
67 continues to ravage families and communities in sub-Saharan Africa with those
68 between the ages of 19 and 55 years being the hardest hit group. This age group
69 coincides with the most productive group in Africa, especially populations in most
70 of our agro-estates [3].

71

72 The location of Mukete Estates Limited (MEL) is in the South West Region, the
73 third highest HIV infected region of Cameroon demands serious attention [6]. There
74 has been no mainstreaming of HIV/AIDS activities into programmes of MEL.
75 Existing HIV/AIDS activities have not been properly coordinated, monitored and
76 evaluated. There is limited collaborative research on the disease in MEL, making it
77 difficult to attract substantial funding to undertake comprehensive interdisciplinary
78 research/preventive work.

79 Personal HIV risk perception has been a topical issue over the years given its
80 hypothesised association with the adoption of safe sexual behaviours [7,8]. However,
81 no studies have been carried out on agricultural farmers in Cameroon, to ascertain the
82 psychosocial and behavioural correlates of perception of risk of contracting HIV. Low
83 personal HIV risk perception is very dangerous as it may fuel the spread of HIV
84 infections, since farm workers may continue to lead risky sexual lives as they think
85 that they are not at risk of contracting the virus [9].

86 **1.1 The Health belief Model (HBM)**

87 Psychosocial theories of behaviour change, such as the Health Belief Model, the
88 AIDS Risk Reduction Model, the Trans-theoretical Model, the Social Learning
89 Theory and the Theory of Reasoned Action, stress the pivotal role played by an
90 individual's perception of the risk of a given problem in the process of human
91 behaviour change [10-13].

92 These theories underscore that a person's recognition of his/her susceptibility to any
93 problem or disease, including HIV, is vital in prompting the person to taking actions
94 that may reduce his/her vulnerability. In other words, the actions that an individual
95 takes to protect himself/herself from any disease, including HIV, will to a large extent
96 depend on his/her perception of the risk of the disease. In the context of HIV, an
97 individual's perception of the risk of HIV infections often affects a number of factors
98 such as whether or not he/she has an HIV test or uses condoms during sexual acts.

99 The Health Belief Model (HBM) identifies the perceived susceptibility, perceived
100 severity, perceived benefits, perceived self-efficacy and perceived barriers as
101 predictors of safer sexual activity [13]. The HBM postulates that health-seeking
102 behaviour (preventing HIV/AIDS by consistently using condoms), is influenced
103 by a person's perception of the threats posed by the health problem (the perceived
104 risk of contracting HIV/AIDS), and the value associated with the actions aimed at
105 reducing the threat (consistent condom use to prevent HIV).

106 Based on the assumptions of the HBM [14,15], it could be concluded that without
107 workers' perceptions of HIV/AIDS being a threat, there could be no resultant
108 preventative actions (using condoms consistently) against HIV/AIDS. Therefore,
109 the perception of risk of contracting HIV/AIDS is assumed to be the immediate
110 antecedent of consistent use of condoms to prevent HIV/AIDS. It is therefore,

111 hypothesised that the higher a farm worker's perception of contracting
112 HIV/AIDS, the higher his/her chances of implementing preventive measures.

113 In terms of the HBM's root in value-expectancy theory, attitudes are developed
114 and modified based on assessments about beliefs and values. Sensitivity to risk
115 depends on factors other than knowledge of infection mechanisms, it depends on
116 behaviours, such as an individual's awareness of HIV/AIDS (its prevalence, the
117 severity of its symptoms, its lethality) and the perceptions of their general health
118 status [16]. Therefore, sensitivity to risk is explained by the components of the
119 HBM. This study was therefore conducted to investigate the psychosocial and
120 behavioural correlates of HIV risk perception among workers of Mukete Estates
121 Limited, Meme Division, Southwest region of Cameroon

122

123 2. METHODS

124 2.1 Design

125 A quantitative cross-sectional design was adopted for this study, and conducted in
126 June 2015.

127 Study setting

128 The study was conducted at farms of Mukete Estates Limited (MEL) in
129 Meme Division in the Southwest region of Cameroon. Operating Since 1910,
130 MEL has been producing cocoa, rubber and palm oil over several decades. The
131 company's drive has been to run the most efficient and cost effective operation in
132 the area in whatever crop it grows in a bid to relentlessly boost shareholder value
133 and steadily improve the living conditions of its workers while contributing in a
134 significant manner to the socio-economic development of its neighbouring
135 communities. It has four estates in three subdivisions of the Meme Division, in the
136 Southwest region of Cameroon, covering a considerable expanse of land: - *Komba*
137 *Dikwi Rubber Estate in Konye Subdivision, Nkangmudikum Rubber Estate in*
138 *Kumba I Subdivision, Oil Palm Estate in Kumba I Subdivision and Bai Many Oil*
139 *Palm Estate in Mbonge Subdivision*. It is an agro-industrial establishment with a
140 labour force of approximately 500, manning the four estates with palm oil and
141 Rubber as main cash crops.

142 Kumba, where the headquarters is located, is an urban municipal area in the
143 Southwest region of Cameroon, with a total population of approximately
144 166,000 inhabitants (51.2% males and 48.8% females) [17]. The Southwest
145 region has an HIV/AIDS prevalence of 5.7%, which is above the Cameroon
146 national prevalence of 4.3% [6].

147 **2.2 Study population**

148 The population for this study comprised male and female workers employed on
149 Mukete Estates, either on a permanent or seasonal basis numbering around five
150 hundred individuals.

152 **2.3 Sampling method**

153 All farms of MEL were selected purposively to participate in this study. Cluster
154 sampling approach was used whereby for each participating farm, a list of all
155 employees was obtained along with their type of work. The researcher used
156 proportionate sampling to select the number of employees from each site in order to
157 make up the pre-determined sample size of 208. No data on the perception of risk of
158 contracting HIV among agro-estate workers was available. To detect a 10%
159 difference in the perception of risk with 95% confidence interval (CI), and 80%
160 power, a sample size of 200 was needed. With the addition of 4% nonresponse rate,
161 the final sample size was 208. Change Agents who are farm workers trained by the
162 HIV/AIDS Prevention Research Network, Cameroon (HIVPREC)
163 partners, as peer educators, explained to the workers what the survey was all about.

164 **2.4 Questionnaire development and Data collection**

165 Pre-tested structured questionnaires were used to collect data from respondents.
166 Questionnaires comprised two sections. Section one assessed the socio-
167 demographic characteristics and section two assessed the individual
168 perceptions, structured according to the HBM, of MEL workers. The
169 questionnaires were administered by trained facilitators of HIVPREC, due to the low
170 levels of literacy among the respondents. The training focused on understanding
171 the meaning of each question, the need to obtain an informed consent, keeping
172 confidentiality of the information they gathered, and reliability of data as well as
173 the techniques of presenting the questions to the respondents in an

174 understandable manner. During data collection, frequent checkups were made by
175 the HIVPREC facilitators to ensure the completeness and consistency of the data.
176 The returned questionnaires were checked for completeness by the first author.

177

178 The questionnaires were developed after review of relevant literature, and adapted
179 partly from the HIV/AIDS Behavioral Surveillance Survey [18], and other
180 published journal articles [7,19,20]. The questionnaires were slightly modified for
181 clarity of terms and order of questions.

182

183 **2.5 Data analysis**

184 Binomial logistic regression was computed to ascertain the correlates of HIV risk
185 perception using the Statistical Package for Social Sciences (SPSS) version 20
186 software program at the level 0.05.

187

188 **2.6 Ethical considerations**

189 Permission to conduct the current research was obtained from research and ethics
190 committee of the HIV/AIDS Prevention Research Network, Cameroon (HIVPREC)
191 and from the Management of MEL. Participants were given verbal and written
192 information about the study and signed an informed consent form
193 before data collection. No personal information or identifier was retained
194 within the questionnaires. All respondents participated on a voluntary basis
195 and no financial incentives were provided. Ethical clearance for this study was
196 obtained from the School of Public Health, University of Health and Allied Sciences
197 (UHAS), Ghana, Ethical Review Committee.

198

199 **2.7 Measures**

200 **2.7.1 Outcome (dependent variable): perception of risk of contracting HIV**

201 The outcome variable of interest for this study is perception of risk of contracting HIV
202 as reported by workers of MEL. This was measured with the following question:
203 'How at risk of contracting HIV are you?' The response options were '1=not at risk
204 (reference category)' and '2=at risk'.

205 **2.7.2 Explanatory (independent) variables**

206 ***Perceived susceptibility to HIV:*** This was measured based on the level of agreement
207 with the following two statements, each considered separately: ‘HIV/AIDS really
208 exists,’ and ‘A healthy looking person can be HIV positive’.

209 ***Perceived severity of HIV/AIDS:*** This measure was based on the degree of agreement
210 with the following two statements: ‘HIV/AIDS is a serious and deadly disease’, and
211 ‘Anti-Retroviral Therapy (ART) can cure HIV/AIDS’.

212 ***Perceived benefit of female condom use:*** This measure was based on the degree of
213 agreement with the following statement: ‘Correct and consistent use of condom
214 during sexual intercourse could prevent transmission of HIV’.

215 ***Perceived condom use self-efficacy:*** This measure was based on the degree of
216 agreement with the following two statements: ‘I feel confident that I can convince my
217 partner(s) to use a condom during sexual intercourse’ and ‘I have the confidence that I
218 could refuse sex with my partner if he/she refuses to use a condom’

219 ***Perceived barriers to condom use:*** This measure was based on the degree of
220 agreement with the following seven statements: ‘Condom use makes sex less
221 enjoyable for both partner,’ ‘I lack knowledge on correct condom usage’, ‘Condoms
222 are not readily available’, ‘Condom makes partner feel untrusted’, ‘I feel embarrassed
223 to buy condoms’, ‘A condom can burst and land up in the woman’s stomach during
224 sex’, and ‘I feel embarrassed to ask my partner to use a condom during sex’.

225 The response options for all the perception variables were categorized into ‘2=agree’
226 and ‘1=disagree’, and were coded in like manner, with ‘disagree’ coded as the index
227 category.

228 ***Socio-Demographic Variables:*** The following socio-demographic variables were
229 included in the study: age, categorized into five groups (15-24, 25-35, 36-45, 46-55
230 and more than 55 years), marital status, categorized into two groups (single and
231 married), religious affiliation, categorized into Christians and Muslims, gender,
232 categorized into male and female, and level of education, categorized into primary
233 (index category), secondary and tertiary education.

234 ***Sexual Experience:*** This was measured with the question: Have you ever had sexual
235 intercourse with a male/female partner? With '1=yes' or '0=no (reference category)'
236 as response options.

237 ***Regularity of condom use:*** The question asked respondents who were sexually active:
238 "How often do you use condom during sexual intercourse?" The response options
239 were categorized into '1=always' and '0=others'.

240 ***Condom use during first sexual encounter:*** This was measured with the following
241 question: Did you use a condom the first time you had sexual intercourse with your
242 partner? The response options were '1=yes' and '0=no (index category).

243 ***Condom use during last sexual encounter:*** This was measured with the following
244 question: Did you use a condom the last time you had sexual intercourse with your
245 partner? The response options were '1=yes' and '0=no (index category).

246 ***Ever used a condom use during sexual intercourse:*** This was measured with the
247 following question: Have you ever used a condom during sexual intercourse with your
248 partner? The response options were '1=yes' and '0=no (index category).

249 ***Number of sexual partners:*** This was measured with the following two questions:
250 'How many sexual partners have you had in the past one year?' and 'how many
251 concurrent sexual partners do you have at present?' The response options were '1=one
252 or less (reference category)' and '2=more than one'.

253 **2.8 Method of analysis**

254 Binomial logistic regression was performed using SPSS version 20 to examine the
255 psychosocial and behavioural correlates of perception of risk of contracting HIV
256 using the HBM as framework. Binomial logistic regression predicts the probability
257 that an observation falls into one of two categories of a dichotomous dependent
258 variable based on one or more independent variables that can be either continuous or
259 categorical. The assumptions for the use of binomial logistic regression, were met
260 [21].

261

262 The procedure gives rise to estimates of odds of a certain event occurring (perception
263 of risk of contracting HIV), given a set of explanatory variables (psychosocial and
264 behavioural factors). All these assumptions were fulfilled in this study, thus justifying

265 the use of binomial logistic regression to understand the psychosocial and behavioural
266 correlates of perception of risk of contracting HIV/AIDS among MEL workers,
267 Cameroon.

268
269 To assess the relative importance of the behavioural variables and the main
270 components of the HBM, we built nine models predicting perception of risk of
271 contracting HIV/AIDS. These variables were entered into the model in a forward
272 stepwise fashion to identify the net contribution of specific sets of variables while
273 adjusting for the simultaneous effects of other sets of variables in the model. To
274 assess the predictive utility of each component of the HBM as a whole, that is how
275 individuals with various combinations of health beliefs are more or less likely to
276 perceive the risk of contracting HIV/AIDS, each component of the HBM was entered
277 into the model one at a time. The 95% confidence intervals were used.

278

279 3. RESULTS

280 3.1 Descriptive

281 Of the 208 respondents in this study, 138 (66.3%) were males and 70 (33.7%) were
282 females. The majority, 103 (49.5%) were between the ages of 25 and 35 years, with
283 the majority, 133 (63.9%) being married. One hundred and seventy (81.7%) were
284 Christians and the majority, 121 (58.2%) had secondary education (table 1).

285 Table1: Socio-demographic characteristics of farmers in MEL, Kumba, Cameroon (n=208)

Characteristics	Frequency	Percentage
Age Group		
15-24	13	6.3
25-35	103	49.5
36-45	69	33.1
46-55	13	6.3
>55	10	4.8
Gender		
Male	138	66.3
Female	70	33.7
Marital Status		
Single	75	36.1
Married	133	63.9

Religious Affiliation		
Christian	170	81.7
Muslim	38	18.3
Academic level		
Primary	48	23.1
Secondary	121	58.2
Tertiary	39	18.7

286 **Psychosocial factors:** As for the components of the HBM, the perception that
287 HIV/AIDS really exists and that a healthy looking person can be HIV positive
288 (perceived susceptibility) were quite high, 94.2% and 66.7% respectively. Majority,
289 84.6% of the respondents perceived that HIV/AIDS is a serious and deadly disease,
290 and 75.0% perceived that ART cannot cure HIV/AIDS (perceived severity). For
291 perceived benefits, only 65.8% of the respondents perceived that correct and
292 consistent use of the condom can prevent sexual transmission of HIV/AIDS.
293 Similarly, only 60.1% perceived that they can convince their partners to use the
294 condom during sexual intercourse, and only 69.2% perceived that they could refuse
295 sex with their partners if they refuse to use condoms (perceived self-efficacy).
296 However, a considerable proportion of the respondents, 79.8% perceived that the
297 condom makes sex less enjoyable for both partners; a great majority, 82.7% perceived
298 that condom makes partner feel untrusted; a considerable majority, 61.5% perceived
299 that they lack knowledge on the correct condom usage; 47.1% perceived that the
300 condom is not readily available; a great majority, 74.1% perceived that they feel
301 embarrassed to buy condoms; a considerable majority, 56.3% perceived that they feel
302 embarrassed to ask their partners to use condoms during sex, and 51.7% perceived
303 that a condom can burst during sex and land in the stomach of the female partner
304 (perceived barriers). With regard to perception of risk of contracting HIV, the
305 majority, 55.3% perceived that they are not at risk (table 2).

306 **Behavioural factors:** With regard to sexual behaviours, the majority, 96.1% reported
307 having experienced sex, and of these, 49.0% reported having had multiple sexual
308 partners in the last one year before this study, and 31.5% reported having multiple
309 concurrent sexual partners during the period of this study. The proportion of the
310 sexually active farm workers who reported ever used the condom was high, 65.0%,
311 and the proportion who reported always using the condom was low, 23.0% (table 2).

312 **Table 2: Psychosocial and behavioural factors (descriptive statistics)**

Components of the HBM and behavioural factors	Frequency	Percentage
Perceived susceptibility to HIV/AIDS		
<i>HIV/AIDS really exists</i>		
Agree	196	94.2
Disagree	12	5.8
<i>A healthy looking man can be HIV positive</i>		
Agree	138	66.3
Disagree	70	33.7
Perceived severity of HIV/AIDS		
<i>HIV/AIDS is a serious and deadly disease</i>		
Agree	176	84.6
Disagree	32	15.4
<i>Anti-Retroviral Therapy (ART) can cure HIV/AIDS</i>		
Agree	52	25.0
Disagree	156	75.0
Perception of risk of contracting HIV		
<i>How at risk of contracting HIV are you?</i>		
Not at risk	115	55.3
At risk	93	44.7
Perceived benefit of condom use		
<i>Correct and consistent female condom use can prevent HIV/AIDS</i>		
Agree	137	65.8
Disagree	71	34.2
Perceived barriers to condom use		
<i>Condom makes sex less enjoyable for both partners</i>		
Agree	166	79.8
Disagree	42	20.2
<i>Condom use makes partner feel untrusted</i>		
Agree	172	82.7
Disagree	36	17.3

<i>I lack knowledge on correct condom usage</i>		
Agree	128	61.5
Disagree	80	38.5
<i>Condoms are readily available</i>		
Agree	110	52.9
Disagree	98	47.1
<i>I feel embarrassed to buy condom</i>		
Agree	154	74.1
Disagree	54	25.9
<i>A condom can burst and land in the woman's stomach</i>		
Agree	107	51.7
Disagree	101	48.3
<i>I feel embarrassed to ask my partner to use a condom</i>		
Agree	117	56.3
Disagree	91	43.7
Perceived condom use self-efficacy		
<i>I feel confident that I can convince my partner(s) to use the female condom during sexual intercourse.</i>		
Agree	125	60.1
Disagree	83	39.9
<i>I have confidence that I could refuse sex with my partner if she/he refuses to use a condom</i>		
Agree	144	69.2
Disagree	64	30.8
Sexual behaviours		
<i>Have you ever had sexual intercourse with a male/female partner?</i>		
Yes	200	96.1
No	08	3.9
<i>Have you ever used a condom?</i>		
Yes	130	65.0
No	70	35.0
<i>How often do you use a condom during sex?</i>		
Always	46	23.0

Seldom	84	42.0
Never	70	35.0
<i>Did you use a condom the first time you had sex?</i>		
Yes	96	48.0
No	104	52.0
<i>Did you use a condom the last time you had sex?</i>		
Yes	118	59.0
No	82	41.0
Number of sexual partners		
<i>How many sexual partners have you had in the past one year?</i>		
One or less	102	51.0
More than one	98	49.0
<i>How many concurrent sexual partners do you have at present?</i>		
One or less	137	68.5
More than one	63	31.5

313

314 3.2 Psychosocial and behavioural correlates of perception of risk of contracting 315 HIV/AIDS

316 Table 3 presents the summary and classification of the binomial logistic regression
317 model. The model explained between 22% (Nagelkerke R^2) of the variance in risk
318 perception and correctly classified more than 68% of cases. The logistic regression
319 model (Chi-square) was not statistically significant ($p=0.138$), denoting inadequate
320 explanatory power of the variables used in explaining the dependent variable
321 (perception of risk of contracting HIV/AIDS).

322

323

Table 3: Odds Ratios (OR) of perception of risk of contracting HIV/AIDS from the logistic regression models				
Effect	Odds Ratios (OR)	Confidence interval (CI)	Wald	Sig.
Perceived Susceptibility				
HIV/AIDS really exists	3.789	(1.352-10.619)	6.418	0.011

A healthy looking person can be HIV positive	4.100	(1.200-14.005)	5.069	0.024
Perceived severity				
HIV/AIDS is a serious and deadly disease	1.952	(0.490-7.781)	0.899	0.343
ART can cure HIV/AIDS	2.298	(1.002-5.270)	3.857	0.05
Perceived benefit of condom use				
Correct and consistent use of the female condom can prevent the sexual transmission of HIV	1.136	(0.388-3.325)	0.054	0.817
Perceived barriers to condom use				
Condoms are readily available	0.317	(0.069-1.462)	2.170	0.141
I lack knowledge on correct condom usage	2.756	(0.797-9.530)	2.564	0.109
Condom use makes partner feel untrusted	0.501	(0.156-1.613)	1.343	0.247
Condom use makes sex less enjoyable	1.422	(0.554-3.648)	0.535	0.464
A condom can burst and land inside a woman's stomach	1.207	(0.224-6.512)	0.048	0.827
I feel embarrassed to ask my partner to use a condom	0.741	(0.184-2.987)	0.178	0.673
I feel embarrassed to buy condoms	0.296	(0.112-0.780)	6.064	0.014
Perceived condom use self-efficacy				
I feel confident that I can convince my partner(s) to use a condom during sexual intercourse	0.138	(0.033-0.573)	7.444	0.006
I have confidence that I could refuse sex with my partner if he/she refuses condom	5.273	(1.475-18.855)	6.541	0.011
Number of sexual partners in past one year	1.576	(0.558-4.453)	0.737	0.391
Number of concurrent partners at present	1.116	(0.362-3.753)	0.066	0.797
Condom use during first sex	0.638	(0.261-1.563)	0.966	0.326
Condom use during last sex	0.471	(0.166-1.334)	2.009	0.156
Ever used condoms during sex	1.019	(0.351-2.958)	0.001	0.972
Consistent condom use	0.718	(0.255-2.026)	0.391	0.532
Socio-demographic variables				
Age	1.226	(0.755-1.991)	0.676	0.411
Sex	0.564	(0.241-1.324)	1.730	0.188
Marital status	0.845	(0.357-2.001)	0.146	0.702
Level of education	1.018	(0.543-1.907)	0.003	0.957
Religion	2.844	(1.213-6.666)	5.783	0.016

325 Among the socio-demographic factors, religion was found to significantly correlate
326 with perception of risk of contracting HIV among MEL workers, with Muslims being
327 at higher odds of perceiving themselves at risk of contracting HIV than Christians
328 [OR=2.844 (95% CI 1.213-6.666)] (table 3).

329 Among the components of the HBM, workers who perceived that HIV/AIDS really
330 exist and that a healthy looking person can be HIV positive (perceived susceptibility),
331 were at higher odds of risk perception of contracting HIV/AIDS [OR=3.789 (95% CI
332 1.352-10.619)] and [OR=4.100 (95% CI 1.200-14.005)] respectively; workers who
333 perceived that they feel embarrassed to buy condoms (perceived barrier) were at lower
334 odds of risk perception of contracting HIV/AIDS: [OR=0.296 (95% CI 0.112-0.780)];
335 workers who perceived that they have the confidence they could refuse sex with their
336 partners if they refused to use condoms (perceived self-efficacy), were associated with
337 higher odds of perception of risk of contracting HIV/AIDS: [OR=5.273 (95% CI
338 1.475-18.855)].

339 On the contrary, workers who perceived that ART can cure HIV/AIDS (perceived
340 severity) were at higher odds of perception of risk of contracting HIV/AIDS:
341 [OR=2.298 (95% CI 1.002-5.270)]. In the same vein, workers who perceived that they
342 have the confidence that they can convince their partners to use condoms during sex
343 (perceived self-efficacy), were at lower odds of perception of risk of contracting
344 HIV/AIDS: [OR=0.138 (95% CI 0.033-0.573)].

344. **DISCUSSION**

346 The socio-psychological literature on health-related behaviours emphasises the
347 perception of being at risk of infection as one of the necessary conditions for
348 behavioural change. Moreover, the degree of perceived risk seems to affect
349 individuals' actual control in adopting preventive measures [22]. Sensitivity to risk
350 depends on factors other than knowledge of infection mechanisms; it also depends on
351 behaviour, such as individual awareness of the illness (its prevalence, the severity of its
352 symptoms, its lethality) and the perception of the general health status [16].

353 Rosenstock (1974) who developed the HBM suggested that preventative action is more
354 likely among those who feel vulnerable to a disease [13]. This suggests that people
355 have to perceive themselves to be at risk of infection in order to take actions to practise
356 safer sexual behaviour such as fidelity and condom use.

357 In this study, the 55.3% of workers who did not perceive themselves to be at risk of
358 contracting HIV/AIDS, might not be motivated to take preventive measures (consistent
359 condom use) against HIV/AIDS. One explanation for low perceived HIV/AIDS risk
360 might be that workers may exhibit optimistic bias, tending to underestimate risks in
361 general due to feelings of invulnerability. Additionally, HIV/AIDS is a highly
362 stigmatised disease [23,24]. Acknowledging one's own risk implies putting oneself at
363 risk of being stigmatised. Thus workers might avoid self-disclosure, by downplaying
364 their own personal risk, leading to further low risk perceptions [25].

365 In this study, perceived susceptibility to HIV/AIDS was found to be a significant
366 correlate of perception of risk of contracting HIV/AIDS (table 3). Individuals who
367 deny the presence of HIV/AIDS in their community do not perceive themselves to be
368 vulnerable to the disease. Although only 5.8% of the workers denied the existence of
369 HIV/AIDS and 33.3% denied that a healthy looking person can be HIV positive, such
370 individuals might perceive themselves as not being at risk of HIV/AIDS. These
371 findings emphasise the necessity of strategies to increase the perceived susceptibility to
372 HIV/AIDS, among farm workers in Cameroon.

373 Perceived barriers refer to one's belief in the tangible and psychological costs of the
374 advised behaviours against a condition or problem [10,26]. There could be several
375 barriers that affect workers' decisions to take particular actions against a problem or
376 condition. They include phobic reactions, physical as well as psychological barriers,
377 accessibility factors, possible blocks or hindrances to engage in preventive behaviours,
378 including such factors as cost, inconveniences and unpleasantness [27,28].

379 In this study, perceived barriers to condom use, in terms of feeling of embarrassment
380 in buying condoms, was also a significant correlate of HIV risk perception among farm
381 workers of MEL (table 3).

382 Receptiveness to condom use is plagued by barriers including embarrassment or
383 timidity to obtain condoms from sources that require person-to-person contact [29]. It
384 is only when workers realise that they have the capacity to deal with these barriers, that
385 they would be able to take the necessary actions.

386 Perceived condom use self-efficacy, is the strength of an individual's belief in one's
387 own ability to respond to novel or difficult situations and to deal with any associated
388 obstacles or setbacks. It is one's ability to successfully take action [26]. One should

389 feel that one is capable of taking the necessary action correctly because it is that
390 confidence that would motivate one to initiate and sustain the action [10].

391 In this study, perceived self-efficacy in terms of perceived confidence to refuse sex
392 with partners if they refuse to use condoms, was found to be a significant correlate of
393 HIV risk perception. This finding is in line with expectations proposed by the HBM
394 [14,15]. If one does not perceive oneself to be at risk, there would be no need to
395 negotiate condom use or refuse sex without condom use. According to the HBM,
396 workers who perceived themselves to be susceptible to HIV/AIDS need to have the
397 confidence that they can use condoms, before they could use condoms correctly and
398 consistently to prevent HIV/AIDS. Workers with low condom use self-efficacy might
399 not use condoms consistently during sexual intercourse to prevent HIV/AIDS.

400 Whether or not formal sexuality education programmes are offered at Mukete agro-
401 estates, self-efficacy must be understood by all involved as a fluid state in which the
402 individual worker finds him or herself. Programme leaders should be always vigilant to
403 detect possible changes in workers' self-efficacy levels. This might be established via
404 open relationships with workers and via role play, values clarification and open
405 discussion groups in life skills training sessions.

406 In this study, being a Muslim was associated with higher HIV risk perception.
407 Religions such as Christianity are factors which could affect customs regarding sexual
408 practices such as condom use. Religion could sometimes hamper the effective use of
409 condoms in the prevention of HIV/AIDS transmission. The Roman Catholic Church,
410 as a Christian church, opposes condom use in favour of "direct contact" [30]. This
411 could have serious implications in the spread of HIV/AIDS.

412 Notwithstanding the sensitivity of sex and sexuality matters from a religious point of
413 view, every effort should be made to involve religious leaders in sexuality education
414 programmes of MEL. However, caution should be exercised to maintain the scientific
415 facts surrounding HIV/AIDS and to separate these from value laden and emotive
416 nuance provided by religion.

417. **418. LIMITATION**

418 The results of the study should be interpreted in line with the following limitations:
419 Firstly, for the mere fact that the respondents knew that they were under study, they
420 might have given response to questions and items in a manner which they perceived as

421 being more polite and not really as they felt about or perceived them. They might have
422 given the answers they thought the researcher might expect.

423 Secondly, the sample was small. The inclusion of more farm workers might have had
424 some effects on the results of this study. Thirdly, being a cross-sectional study,
425 causality could not be ascertained.

426

426. CONCLUSION

428 Therefore, the three components of the HBM with high significance (perceived
429 susceptibility to HIV/AIDS, perceived barriers to condom use and perceived self-
430 efficacy for condom use) religion should be considered in designing policies and
431 intervention programmes geared towards increasing HIV risk perception among
432 workers of MEL, Cameroon. This will help in reducing the impact of HIV/AIDS on
433 the productivity and output of workers of MEL, and MEL as a company.

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