

Impact of Eye-Health Motivational and Counselling Intervention Programme on Eye-Health Seeking Behavioral Intentions among Commercial Drivers at Ikeja, Lagos State, Nigeria

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Abstract

Eye-health seeking behavioural intentions of commercial drivers is of immense concern considering that driving requires accurate vision because poor vision could result in fatal road accidents. This study was guided by the Information-Motivation-Behavioural-skills-model as a theoretical underpinning to evaluate the impact of eye-health motivational-counselling intervention programme on eye-health seeking behavioural intentions and driving outcomes among commercial drivers in Ikeja local Government Area of Lagos State, Nigeria.

Method: This study was a quasi-experimental design involving three major motor parks in Lagos State. Two interventions and a control group with 35 commercial drivers who consented to participate in the study were selected for each group. The designed intervention was based on a previous educational diagnosis of observed deficiencies of Eye-Health Seeking Behavioural-Intentions of commercial vehicle drivers and implemented for twelve-weeks with a control. Validated structured questionnaire, was employed for data collection. Mean scores of major variables were compared for baseline and follow-up of primary and secondary outcome measures using independent-samples t-Test and ANOVA at 5% level of significance.

Results: Age-range of drivers was 18-60 years. There was no significant difference for major-variables in the study for all groups at baseline ($p>0.05$). At follow up, there was significant difference between intervention group two and group one for information (17.18 ± 3.00 and 9.70 ± 5.38 ; $p<0.001$), Motivation (33.81 ± 6.55 and 31.33 ± 3.79 ; $p<0.001$), Behavioural Skills (10.82 ± 3.22 and 5.61 ± 3.02 ; $p<0.001$), and Eye-Health Seeking Intentions and Driving Outcomes (22.94 ± 6.88 and 19.52 ± 6.06 ; $p>0.05$).

Conclusion: The eye-health educational interventions with motivational-counselling showed more prospects of influencing positive behavioural change on eye-health seeking behaviour among commercial drivers. It is recommended that motivational-counselling be incorporated into driver's education and strategies for effective management of eye-health and safe-driving in Nigeria.

Keywords: Eye-Health-seeking, Health-Education, Motivational-Counselling, Information-Motivation-Behavioural -skills, Commercial-Drivers.

Introduction

Vision and driving are closely interwoven with about 95% of the sensory requirement for driving provided by the eyes (Taylor,1987), making good vision a fundamental factor required for safe driving. Commercial drivers face more complexities on the road daily due to the increasing Nigeria population, bad roads, more complex vehicles due to advancing technologies and busier roads more than ever before (Chidoka, 2012).

The World Health Organization (2004) adjudged Nigeria to be the most dangerous country in Africa with 33.7 deaths per 100,000 populations per year with one in every four-road accident of deaths in Africa occurring in Nigeria. As alarming as these statistics may seem, most drivers are not sufficiently aware of the relationship between good vision and safe driving and so they often ignore the visual requirements for safe driving (EyecarePlus, 2016). The vision requirements for safe driving include a Visual Acuity of 20/40 or 6/9, Visual Fields with binocular fields of at least 120 degrees horizontal and 40 degrees vertical, Contrast Sensitivity and Colour Vision screenings for normal values. (International Council of Ophthalmology, 2016). Behavioural intentions is classified as an indication for an individual to readily perform a given behaviour and these can be prompted by health

promotion and health intervention programs which are based on the idea that obtaining knowledge or information about the cause of a disease and the prevention options available for the disease can facilitate a change in behaviour in an individual regarding promoting good health seeking behaviour (Hubley and Gilbert, 2016). Factors such as age, gender, education, family, society, law, and nature of illness (UNIPROJECTS, 2015) can influence health seeking behaviour and this can vary among different population and within same population.

With poor vision being identified as an important factor that can cause road hazards (Godswill and Adedayo, 2014; Samuel et al, 2014), the eye-health seeking behavioural intentions and practices of commercial drivers should be determined and critically examined with a view to understand the needs of these drivers and provide appropriate eye-health information and motivation the may arouse, concerns for action leading to improved behavioral intentions towards self-eye-healthcare seeking among commercial drivers and the actualization of visual standards necessary for safe driving in Nigeria. This study was a follow up of a previous theory-grounded educational diagnosis of Eye-Health Seeking Behavioural-Intentions of commercial vehicle drivers and sought to develop an intervention protocol that would influence eye-health seeking behavioral intentions and driving outcomes through the implementation of an intervention based on information-motivation and Behavioral skills theoretical framework.

Few studies have evaluated eye-health seeking behavior and utilization of eye care services by commercial vehicle drivers. Considering the dearth of materials in gray literature and published evidence-based Eye-health Motivational and Counseling Intervention Programme, this intervention is considered important in a number of ways. This intervention study is needed to document evidence-based strategy for influencing commercial vehicle drivers to improve their desires to seek eye-health through regular eye checks. Therefore, this study based on finding from a previous study (Unpublished, 2019) sought to develop and apply theory-based innovative Eye-health Motivational and Counseling Intervention Programme incorporating intensive face-to-face personal counseling activities, guided by information-motivational and behavioral skills model theory, to influence intention to undertake regular eye-health checks through improved awareness of benefits, consequences of impaired eye sight and available treatment modalities for correcting defects, if any further leading to safer roads in Nigeria.

Methodology

This study was a twelve weeks quasi-experimental design involving two arms of a set of educational- information Eye-Health intervention Programme with motivational counseling and control. The study population comprised of commercial vehicle drivers operating in commercial vehicle terminus in Lagos State, Nigeria. A simple random sampling was done to determine the three LGAs from which the commercial bus terminus was randomly allocated into the Control (CG), Intervention One (IG-1) and Two (IG-2) Groups. A total of 103 consenting drivers participated in the three groups. The study was conducted in three arms with control (N=34), intervention one (N=35) and intervention two (N=34) groups.

The variables measured were socio-demographic characteristics such as age, gender, educational attainment, ethnic origin, employment status, marital status, religion, type of vehicle driven, how long they have been driving and their state of residence. Other variables measured included the knowledge about eye-health and safe driving; this represented the information component of the underpinning Information-Motivation-Behavioural skills theory. Variables to measure the motivational construct included assessment of personal motivation, perceived susceptibility to visual impairment outcomes, perceived susceptibility to road accidents, perceived barriers to eye-care and safe driving and social motivation. The variables measured under the behavioural skill construct included self-efficacy, benefits of eye-care, behavioural intentions as well as the eye-health and driving outcomes. Dependent Variables were the primary and secondary outcomes of self-reported eye-health seeking intentions and safe driving and their sub-variables. Instrument for data collection included a Focus group discussion, a 70-Item questionnaire.

The pre intervention data was the Baseline data collected using the designed questionnaire from all the three groups of intervention I, II, and control group. The baseline data served as the beginning of the intervention. It was used as the rationale for comparison in all the groups at baseline and post intervention for all the dependent and independent variables that was measured. Data collected from

physical eye examinations were only carried out at baseline to evaluate and determine the eye-health status of the participants.

The Post intervention data was collected with questionnaire post intervention at twelve weeks only. The data collected at baseline was used as a reference for the twelve weeks data collected and to compare the impact of the intervention.

The development of the questionnaire items was structured based on the objectives identified for the study and guided by the conceptual frame work of the IMB Skills Model. The questionnaire was written and developed in two languages, the local Yoruba language and the English language. The aim of this was to ensure that the participants will be able to comprehend the concept and questions in the questionnaire based on their educational levels. There were five sections in the questionnaire which include the demographics, information construct, motivation construct, behavioral construct and the driving outcome section. The intervention consisted of two arms of a set of Educational Information Programme with counseling for only one of the arms and a control. There was a pre-intervention phase, Intervention phase followed by a post intervention phase. The study intervention involved three phases of pre-intervention, intervention and post-intervention. Data collection was carried out using the instruments designed for the study. This was done at two points during the study; the pre-intervention or base-line and post-intervention at the close of the six weeks intervention to measure changes that occurred for information, motivation, behavioral skills and Eye-Health and Driving outcomes and at 12th week follow-up. Statistical analysis was conducted using statistical package for social sciences (SPSS) version 21 software. Data collected was analyzed and displayed as frequency distribution means and standard deviation and test of significance was conducted using independent sample T-test to test significance between baseline and post intervention scores for each group and Analysis of Variance (ANOVA) to determine if any difference in scores exist between the three groups at 5% level of significance.

Results

This twelve-week intervention study involved a total of one hundred and three (103) participants. Demographic Characteristics of Participants were similar across the three groups, majority of the drivers were aged 40-60years, with over 15 years driving experience and predominantly Yoruba ethnicity. (Table 4.1). The measured visual acuity for the drivers across the three-group showed that majority of the drivers had a distant visual acuity less than 6/9 either in one or both eyes. The results of the external eye examination show that pinguecula, pterygium and conjunctivitis were among the common eye problems noticed. The results of the internal examination included insipient cataract, glaucoma and other internal eye problems such as retinopathies, vitreous floater and age-related macular degenerations. The major eye defects observed was cataract formation in either one or both eyes.

Table 1. Demographic characteristics of participants in each arm of the study at baseline

Variables	Control Group N=34		Experimental Group One N=35		Experimental Group Two N=34	
	Frequency	%	Frequency	%	Frequency	%
Age (Years)						
• 18 – 39	2	5.90	5	14.30	3	8.82
• 40 - 60	32	94.12	30	85.71	31	91.18
Ethnicity						
• Yoruba	28	82.35	30	85.71	30	88.24
• Igbo	5	14.71	5	14.29	3	8.82
• Hausa	1	2.94	-	-	1	2.94

Education							
• Non-Formal	5	14.71	3	8.57	6	17.65	
• Primary	12	35.29	16	45.72	12	35.29	
• Secondary	15	44.12	13	37.14	14	41.18	
• Tertiary	-	-	1	2.86	1	2.94	
• Non-Response	2	5.88	2	5.72	1	2.94	
Vehicle Type							
• Commercial	35	100	34	100	35	100	
• Private	-	-	-	-	-	-	
• Others	-	-	-	-	-	-	
Length of Driving							
• 1 – 5	1	2.94	3	8.57	2	5.88	
• 6 – 10	5	14.71	5	14.29	3	8.82	
• 11 – 15	9	26.47	10	28.57	8	23.53	
• >15	19	55.88	17	48.57	21	61.77	
State of Residence							
• Lagos	25	73.52	23	65.71	26	76.47	
• Ogun	6	17.65	10	28.57	6	17.65	
• Others	3	8.83	2	5.71	2	5.88	
Gender							
• Male	34	100	35	100	34	100	
• Female	-	-	-	-	-	-	
Religion							
• Christianity	11	32.34	13	37.10	10	29.41	
• Muslim	23	67.65	22	62.86	24	70.59	
• Others	-	-	-	-	-	-	

Table 2. Comparison of Measures of Information, Motivation, and behavioural Skills, related to eye-health care seeking at Baseline for all Groups in the study

Variables	Max Points on Scale of Measure	Control Group N=34		Experimental Group One N=35		Experimental Group Two N=34		p-value
		$\bar{X}(SE)$	$\pm SD$	$\bar{X}(SE)$	$\pm SD$	$\bar{X}(SE)$	$\pm SD$	
Information	20	9.27(0.79)	4.61	8.89(0.45)	2.69	8.15(0.67)	3.92	0.472
Motivation	60	27.62(1.10)	6.43	30.63(0.84)	4.98	28.29(0.92)	5.39	0.070
-P Motivation	9	3.79(0.36)	2.01	4.89(0.39)	2.32	3.71(0.32)	1.87	0.035*
-PSVI Sub	9	1.65(0.26)	1.52	1.57(0.27)	1.61	1.66(0.16)	1.65	0.889
-PSRTA Sub	12	4.82(0.38)	2.19	6.49(0.39)	2.28	5.91(0.39)	2.26	0.010*
-PBE Health	15	9.09(0.54)	3.12	8.60(0.51)	3.00	8.56(0.49)	2.84	0.719
-PSM Sub	15	8.27(0.36)	2.08	9.09(0.52)	3.08	8.35(0.59)	3.43	0.441
Beh- Skills	15	5.29(0.72)	5.20	5.54(0.32)	1.88	4.68(0.45)	2.64	0.483
SEB-E Care	9	2.77(0.35)	2.03	2.60(0.28)	1.67	2.59(0.33)	1.89	0.909
BEH Intention	6	2.53(0.50)	2.93	2.94(0.29)	1.73	2.09(0.27)	1.58	0.264
EH & Driving	52	22.74(1.49)	8.68	11.94(0.75)	4.42	14.09(1.05)	6.10	0.000*
-EH Outcome	24	8.27(0.75)	4.37	5.54(0.32)	1.88	4.68(0.45)	2.64	0.000*
-Driv Outcome	28	15.27(1.12)	6.54	29.77(1.19)	7.06	13.56(0.77)	4.47	0.000*

†Abbreviations: **P Motivation**=Personal Motivation, **PSVI Sub**=Perceived Susceptibility to visual Impairment sub-variable, **PSRTA Sub**= Perceived Susceptibility to Road Traffic Accident sub-variable, **PBE Health**= Perceived Benefit of Eye-health care and Safe driving, **PSM Sub**=Perceive Social Motivation sub-variables, **Beh Skills**= Behavioral Skills, **SEB-E Care**= Self Efficacy of Benefits of Eye-care, **BEH Intention**= Behavioral Intentions, **EH & Driving**= Eye Health and Driving Outcomes, **EH Outcomes**= Eye Health Outcomes, **Driv Outcome**= Driving Outcomes

*Significant

Major variables measured at baseline.

The study measured knowledge about eye-health on 20-point rating scale. Result showed that there was no significant difference ($p=0.472$) between CG (9.27 ± 4.61), IG-1 (8.89 ± 2.69) and IG-2 (8.15 ± 3.92) at baseline. Motivation aroused about eye-health seeking and willingness to secure good eye-health was measured on a 60-point rating scale, there was no significant difference ($p=0.070$) in overall mean scores between participants in CG (27.62 ± 6.43), IG-1 (30.63 ± 4.98) and IG-2 (28.29 ± 5.39). Behavioural skills about eye-health seeking measured on a 15-point rating scale reported no significant intergroup difference ($p=0.483$) in mean scores for participants in CG (5.29 ± 5.20), IG-1 (5.54 ± 1.88) and IG-2 (4.68 ± 2.64). The two sub-variables of eye-health seeking intentions and driving outcomes were measured on 16- and 20-point rating scales respectively. The overall major variable was measured on a 36-point rating scale. Results showed that there was a significant difference between CG (15.47 ± 5.34), IG-1 (19.63 ± 6.27) and IG-2 (17.44 ± 6.06) with a p-value of 0.074. (See Table 2)

Table 3. Comparison of measures of information, motivation, and behavioural skills, related to eye-health care seeking at post-intervention for all groups in the study

Variables	Scale of Measure	Control Group N=34		Experimental Group One N=35		Experimental Group Two N=34		p-value
		(SE)	±SD	(SE)	±SD	(SE)	±SD	
Information	20	9.42(0.81)	4.62	9.70(0.94)	5.38	17.18(0.52)	3.00	0.000
Motivation	60	28.70(1.09)	6.25	31.33(0.66)	3.79	33.81(1.14)	6.55	0.003
-P Motivation	9	4.06(0.31)	1.75	4.42(0.28)	1.62	4.97(0.28)	1.59	0.086**
-PSVI Sub	9	1.33(0.39)	2.22	2.70(0.52)	3.00	5.03(0.45)	2.56	0.000
-PSRTA Sub	12	5.64(0.28)	1.58	6.12(0.27)	1.54	7.79(0.57)	3.25	0.010
-PBE Health	15	9.27(0.54)	3.10	9.42(0.50)	2.85	8.12(0.40)	2.23	0.119**
-PSM Sub	15	8.67(0.44)	2.55	8.94(0.44)	2.50	7.91(0.49)	2.80	0.258**
Behav- Skills	15	6.79(0.70)	4.04	5.61(0.53)	3.02	10.82(0.56)	3.22	0.000
SEB-E Care	9	3.91(0.53)	3.05	2.64(0.39)	2.26	6.91(0.37)	2.11	0.000
BEH Intention	6	2.88(0.39)	2.22	2.97(0.26)	1.47	3.91(0.29)	1.67	0.042
EH & Driving	36	18.18(1.13)	6.48	19.52(1.06)	6.06	22.94(1.20)	6.88	0.005
-EH Seeking	16	6.67(0.41)	2.35	7.85(0.77)	2.67	9.00(0.58)	3.31	0.042
-Driv- Outcome	20	11.52(0.84)	4.80	11.67(0.72)	4.12	13.94(0.69)	3.96	0.011

†Abbreviations: **P Motivation**=Personal Motivation, **PSVI Sub**=Perceived Susceptibility to visual Impairment sub-variable, **PSRTA Sub**= Perceived Susceptibility to Road Traffic Accident sub-variable, **PBE Health**= Perceived Benefit of Eye-health care and Safe driving, **PSM Sub**=Perceive Social Motivation sub-variables, **Beh Skills**= Behavioral Skills,

SEB-E Care= Self Efficacy of Benefits of Eye-care, **BEH Intention**= Behavioral Intentions, **EH & Driving**= Eye Health Seeking and Driving Outcomes, **EH Seeking**= Eye Health Seeking, **Driv Outcome**= Driving Outcomes

****Not Significant**

Major Variables measured at Post Intervention.

The study measured knowledge about eye-health, Results of post intervention showed that there was a significant difference ($p < 0.05$) in knowledge between CG (9.42 ± 4.62), IG-1 (9.70 ± 5.38) and IG- 2 (17.18 ± 3.00).

The post-intervention for motivation showed a significant difference ($p < 0.05$) in mean overall scores for motivation between participants in CG (28.70 ± 6.25), IG-1 (31.33 ± 3.79) and IG-2 (33.81 ± 6.55). However, only two sub-variables of perceived susceptibility to visual impairment (PSVI sub) and perceived susceptibility to road traffic accident (PSRTA sub) showed significant difference ($p < 0.050$) others Personal motivation ($p = 0.086$), perceived benefits of eye-healthcare (PBE Health) was $p = 0.119$ and perceived social motivation (PSM sub) was $p = 0.258$ and were not significantly different for between group scores.

At post intervention follow-up the behavioral skills about eye-health reported a significant intergroup difference ($p < 0.05$) in mean scores for participants in CG (6.79 ± 4.04), IG-

1 (5.61 ± 3.02) and IG-2 (10.82 ± 3.22). All sub-variables of self-efficacy of benefits of eye-care ($p < 0.05$) and behavioral intentions ($p < 0.05$) similarly showed intergroup significant differences. For eye-health seeking and driving outcomes, the Results showed that there was a significant difference ($p < 0.05$) between CG (18.18 ± 6.48), IG-1 (19.52 ± 6.06) and IG-2 (22.94 ± 6.88) with all sub-variables similarly significant. (See Table 3)

Impact Evaluation for Control at Post Intervention: The t-values for information, motivation and behavioral skills of the participants measured before and after intervention as shown below did not show significant differences. The percentage differences were also not very significant (See table 4).

Table 4. Impact evaluation measures of variables of information, motivation, and behavioural skills, related to eye-health care seeking for control group in the study

Variables	Measure	Base-line N=34		Post- Intervention N=34		t- value**	%DIFF
		-	\pm SD	(SE)	\pm SD		
Information	20	8.15(0.67)	3.92	17.18(0.52)	3.00	10.571	0.75
Motivation	60	28.29(0.92)	5.39	33.81(1.14)	6.55	3.774	1.80
-P Motivation	9	3.71(0.32)	1.87	4.97(0.28)	1.59	2.978	3.00
-PSVI Sub	9	1.66(0.16)	1.65	5.03(0.45)	2.56	5.994	-3.56
-PSRTA Sub	12	5.91(0.39)	2.26	7.79(0.57)	3.25	2.751	6.80
-PBE Health	15	8.56(0.49)	2.84	8.12(0.40)	2.23	0.690	1.20
-PSM Sub	15	8.35(0.59)	3.43	7.91(0.49)	2.80	0.580	2.67
Behav- Skills	15	4.68(0.45)	2.64	10.82(0.56)	3.22	8.560	10.00
SEB-E Care	9	2.59(0.33)	1.89	6.91(0.37)	2.11	8.825	12.67
BEH Intention	6	2.09(0.27)	1.58	3.91(0.29)	1.67	4.588	5.83
EH & Driving	36	17.44(1.04)	6.04	22.94(1.20)	6.88	3.479	7.53
-EH Seeking	16	6.71(0.42)	2.43	9.00(0.58)	3.31	3.242	1.81
-Driv-outcome	20	10.74(0.71)	4.12	13.94(0.69)	3.69	3.242	12.15

†Abbreviations: **P Motivation**=Personal Motivation, **PSVI Sub**=Perceived Susceptibility to visual Impairment sub-variable, **PSRTA Sub**= Perceived Susceptibility to Road Traffic Accident sub-variable, **PBE Health**= Perceived Benefit of Eye-health care and Safe driving, **PSM Sub**=Perceive

Social Motivation sub-variables, **Beh Skills**= Behavioral Skills, **SEB-E Care**= Self Efficacy of Benefits of Eye-care, **BEH Intention**= Behavioral Intentions, **EH**

&**Driving**= Eye Health Seeking and Driving Outcomes, **EH Outcomes**= Eye-Health seeking Intentions, **Driv Outcome**= Driving Outcomes

Impact evaluation for experimental group one at post intervention

The impact evaluation for the intervention group one (IG-1) at post-intervention after twelve weeks of study shows that not much happened in the intervention group one in terms of difference in percentage increase at baseline and post intervention for major variables of information (4.05%), motivation (1.17%), behavioral skills (0.47%), eye-health and driving (0.31%) when compared to the intervention group two. (See Table 5).

Table 5. Impact evaluation measures of variables of information, motivation, and behavioral skills, related to eye-health care seeking for intervention group one in the study

Variables	Scale of Measure	Base-line N=35		Post- Intervention N=35		t-value**	%DIFF
		-	±SD	(SE)	±SD		
Information	20	8.89(0.45)	2.69	9.70(0.94)	5.38	0.779	4.05
Motivation	60	30.63(0.84)	4.98	31.33(0.66)	3.79	0.654	1.17
-P Motivation	9	4.89(0.39)	2.32	4.42(0.28)	1.62	0.945	-5.22
-PSVI Sub	9	1.57(0.27)	1.61	2.70(0.52)	3.00	1.945	12.56
-PSRTA Sub	12	6.49(0.39)	2.28	6.12(0.27)	1.54	0.768	-3.08
-PBE Health	15	8.60(0.51)	3.00	9.42(0.50)	2.85	1.160	5.47
-PSM Sub	15	9.09(0.52)	3.08	8.94(0.44)	2.50	0.214	-1.00
Behav- Skills	15	5.54(0.32)	1.88	5.61(0.53)	3.02	0.104	0.47
SEB-E Care	9	2.60(0.28)	1.67	2.64(0.39)	2.26	0.076	0.44
BEH Intention	6	2.94(0.29)	1.73	2.97(0.26)	1.47	0.069	0.50
EH & Driving	36	19.63(1.06)	6.27	19.52(1.06)	6.06	0.076	0.31
-EH Seeking	16	7.63(0.43)	2.52	7.85(0.46)	2.67	0.349	1.38
-Driv-outcome	20	12.00(0.75)	4.44	11.67(0.72)	4.12	0.320	-1.67

†Abbreviations: **P Motivation**=Personal Motivation, **PSVI Sub**=Perceived Susceptibility to visual Impairment sub-variable, **PSRTA Sub**= Perceived Susceptibility to Road Traffic Accident sub-variable, **PBE Health**= Perceived Benefit of Eye-health care and Safe driving, **PSM Sub**=Perceive Social Motivation sub-variables, **Beh Skills**= Behavioral Skills, **SEB-E Care**= Self Efficacy of Benefits of Eye-care, **BEH Intention**= Behavioral Intentions, **EH**

&**Driving**= Eye Health Seeking and Driving Outcomes, **EH Seeking**= Eye Health Seeking, **Driv Outcome**= Driving Outcomes

Impact evaluation for experimental group two at post intervention

The impact evaluation for group two participants who received a combined Eye-health Education with Motivational Counselling and physical eye examination (EHE-MC) showed that the level of information and knowledge about eye-health, importance of good eye-sight care in driving vehicles and consequences of poor eye sight of respondents when compared between baseline (8.15±3.92) and follow-up (17.18±3.00) showed a significant difference (p<0.05) . Motivation compared between baseline (28.29±5.39) and follow-up (33.81±6.55) showed a significant difference (p<0.05). However, two sub-variables perceived benefits of Eye-health care and safe driving (PBE Health) (p=0.493) and perceived social motivation (PSM sub) (p=0.564) showed no significant difference when their corresponding baseline and follow-up scores were compared. Impact of intervention two on

behavioural skills (Behav-Skills) when baseline scores (4.68±2.64) and follow-up scores (10.82±3.22) were compared showed a significant difference (p<0.05). However, it was observed that when baseline scores (17.44±6.06) were compared with follow-up scores (22.94±6.88), there was a significant difference (p=0.001) reported for eye-health seeking intention and driving outcomes (EH & Driving).

The impact evaluation for the intervention group two (IG-2) at post-intervention after twelve weeks of study shows much improvement in the intervention group two in terms of difference in percentage increase at baseline and post intervention for major variables of information (45.15%), motivation (9.20%), behavioural skills (40.93%), eye-health and driving (15.28%) when compared to the control and intervention group one. (See Table 6).

Table 6. Impact evaluation measures of variables of information, motivation, and behavioural skills, related to eye-health care seeking for intervention group two in the study

Variables	Scale of Measure	Base-line N=34		Post- Intervention N=34		t-value**	%DIFF
		-	±SD	(SE)	±SD		
Information	20	8.15(0.67)	3.92	17.18(0.52)	3.00	10.571	45.15
Motivation	60	28.29(0.92)	5.39	33.81(1.14)	6.55	3.774	9.20
-P Motivation	9	3.71(0.32)	1.87	4.97(0.28)	1.59	2.978	14.00
-PSVI Sub	9	1.66(0.16)	1.65	5.03(0.45)	2.56	5.994	37.44
-PSRTA Sub	12	5.91(0.39)	2.26	7.79(0.57)	3.25	2.751	15.67
-PBE Health	15	8.56(0.49)	2.84	8.12(0.40)	2.23	0.690	-2.93
-PSM Sub	15	8.35(0.59)	3.43	7.91(0.49)	2.80	0.580	-2.93
Behav- Skills	15	4.68(0.45)	2.64	10.82(0.56)	3.22	8.560	40.93
SEB-E Care	9	2.59(0.33)	1.89	6.91(0.37)	2.11	8.825	48.00
BEH Intention	6	2.09(0.27)	1.58	3.91(0.29)	1.67	4.588	30.33
EH & Driving	36	17.44(1.04)	6.04	22.94(1.20)	6.88	3.479	15.28
-EH Seeking	16	6.71(0.42)	2.43	9.00(0.58)	3.31	3.242	14.31
-Driv-outcome	20	10.74(0.71)	4.12	13.94(0.69)	3.69	3.242	15.80

†Abbreviations: **P Motivation**=Personal Motivation, **PSVI Sub**=Perceived Susceptibility to visual Impairment sub-variable, **PSRTA Sub**= Perceived Susceptibility to Road Traffic Accident sub-variable, **PBE Health**= Perceived Benefit of Eye-health care and Safe driving, **PSM Sub**=Perceive Social Motivation sub-variables, **Beh Skills**= Behavioral Skills, **SEB-E Care**= Self Efficacy of Benefits of Eye-care, **BEH Intention**= Behavioral Intentions, **EH Driving**= Eye Health Seeking and Driving Outcomes, **EH Outcomes**= Eye-Health seeking Intentions, **Driv Outcome**= Driving Outcomes.

Discussion

Most of the drivers had an uncorrected visual acuity of less than 6/9 in one or both eyes with pterygium and cataract as the major pathologies. Drivers that had less than 6/9 in both eyes did not meet the requirement for commercial driving according to the World Health Organization (2014). Before the intervention, most of the drivers demonstrated inadequate knowledge about eye-health, consequences of poor vision and safe driving in all the groups. Majority of the drivers also had low perceptions about the risk of visual impairments in driving; they demonstrated poor motivation towards eye-health issues with low self-efficacy of eye-care benefits of eye-healthcare and observed driving outcomes. But there was a significant improvement observed after the intervention because the study targeted these issues by providing educational and counseling intervention program which

enlightened the commercial drivers hence there was a remarkable significance in the post intervention group.

The impact of the intervention was significant on primary outcomes of eye-health seeking behavioral and the secondary outcomes of self-reported eye-health driving outcomes. Such that the drivers were now willing to secure eye-care services on their own, willing to wear eye glasses to drive if required and they demonstrated self-efficacy of eye-health benefits which is in line with the Information-Motivation-Behavior skill model by Fisher and Fisher, (1992). This result was in tandem with the research done in Ethiopia by Zeleke, (2015), who evaluated the impact of the Information Motivation Behavior skill model on adherence to antiretroviral therapy as well as the findings of Aliabadi et al (2015).

Comparing the impact evaluation measures for intervention group two IG-2 (table 4.7), at both baseline and post intervention showed significant P-values. This can be interpreted to mean that the impact evaluation of the intervention group two at both baseline and post intervention produced a significant P-value for information, motivation and health intentions relating to eye-care in the commercial drivers. This indicate that educational intervention alone is not sufficient but when it is supported by motivational counseling to reinforce the information provided then the commercial drivers are better motivated to act with good eye-health behaviors.

This study concluded that the Information-Motivation-Behavior (IMB) - based intervention had more impact on the participant's eye-health seeking intentions and driving outcomes than the control or intervention one. Commercial drivers play a significant role in the economy of Nigeria considering the fact that road transportation is still the major means of transportation in Nigeria. This study has shown that most of the commercial drivers do not have the eyesight requirements for safe driving, implicating poor eye-health as one of the possible causes and complications to road accidents. This study has been able to validate the implementation of positive behavioral intervention using the information-motivation-behavioral skills model to achieve this purpose.

This study has demonstrated that the extent to which commercial drivers are well informed about their eye-health and importance of eye care in safe driving coupled with a good motivation to act especially when they possess the required behavioral skills for effective action, it is shown that these commercial drivers will most likely be able to initiate on their own and maintain good eye-health promoting behaviors with positive eye-health and driving outcomes.

Recommendations

This study revealed an unsatisfactory knowledge, motivation and behavioral skills about eye-health, importance of good eye-sight care and consequences of poor eye sight in safe driving at baseline, however, the implementation of the intervention modified and improved their driving outcomes. This study therefore recommends the incorporation of eye-health education and motivational counseling into commercial driver's training on a routine basis.

In the course of this study, physical eye examination was carried out in all the groups showing that most of the drivers had hardly had a physical eye examination. It is therefore recommended that a physical eye examination should be made compulsory for all commercial drivers; this study recommends that such an eye examination should be comprehensive and carried out by an optometrist in an eye clinic.

During this study, there was a literature search for a national policy on eye care and safe driving in Nigeria but none was found. This study therefore recommends that the findings from this study should be included with other studies and used as a basis for the formulation of a national policy on eye-care and safe driving in Nigeria.

This study is also recommending six months and one year follow up for the participants in this study and the different motor parks in Nigeria should develop an in-house mechanism for training and retraining of commercial drivers especially in the areas of eye-health and safe driving.

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References

- [1].Aliabadi N., Carballo-Diequez A., Bakken S., Rojas M., Brown W 3rd., Carry M., Mosley J.P., Gelaude D., Schnall R., (2015). Using the information-Motivation-Behavioral Skills Model to guild the development of n HIV prevention Smartphone application for high- risk MSM.
- [2].Alfred S. (1995). Towards affordable, Sustainable eye care. *Int.opthal* 18.287-292.
- [3].EyecarePlus., (2016) Seven reasons why vision is important in driving. Retrieved online from <http://www.eyecarevision.com.au/vision-affects-driving/>.
- [4].Chidoka O.B (2012). Activating the United Nations Decade of action on road safety in Nigeria 2011-2020.
- [5].Retrieved online from <http://www.frsc.gov.ng/decadeofaction2010.pdf>.
- [6].Cornman D.H, Schmiede S.J, Bryan A, Benziger T.J, Fisher J.D. (2007). An information-motivation-behavioral skills (IMB) model-based HIV prevention intervention for drivers in India. *Soc.sci. med* 64 (8), 1572-84
- [7].Fisher J.D., Fisher W.D., (1992). Changing AIDS-risk behavior. *Psychological bulletin* 111(3).455-474 .
- [8].<http://dx.doi.org/10.1037/0033-2909.111.3.455>.
- [9].Fisher J.D., Fisher W.D., (1992). Changing AIDS-risk behavior. *Psychological bulletin* 111(3).455-474. <http://dx.doi.org/10.1037/0033-2909.111.3.455>.
- [10].Gichangi M.M, Gathecha G.K. Duncan K., (2015): Vision testing to prevent road traffic accidents in Kenya.
- [11]. *Com eye health: vol 28 no 91 ppS04-S06*
- [12]. Godswill P, Adedayo A. (2014). Visual Function of drivers and its relationship to road traffic accidents in urban Africa. *Springer plus* 3:47
- [13]. Hubley J.O., Gilbert C. (2006). Eye health promotion and the prevention of blindness in developing countries: critical issues. *Br. J. Ophthalmol.* v. 90(3):279-284. doi:10.1136/bjo.078451.
- [14]. Isawumi M.A., Adeoti C.O., Ubah J.N., Oluwatimilehin I.O., Raji R.A., (2011). Ocular status of commercial drivers in Osun State, Nigeria. *Afr.J.med sci*: 40(4):405-11 pmc 22783693.
- [15]. International Council of Ophthalmology (2006).. Report prepared for the international council of ophthalmology at the 30th World ophthalmology congress. Visual Standards: vision requirements for driving safety with emphasis on individual assessment. Sao Palo, Brazil. Retrieved from <http://www.icoph.org/standards>.
- [16]. Mackian S. (2003). A review of health-seeking behaviour: problems and prospects. Health Systems Development Programme, University of Manchester. Retrieved online from https://assets.publishingservice.gov.uk/media/.05-03_health_seeking_behaviour-pdf.
- [17]. Mohammed M.A., Selvaraj S., Gudlavalleti V.S., Clare G., Tafida A., Christian E., Mansur M.R., (2009). Causes of blindness and visual impairment in Nigeria: the Nigeria National blindness and visual impairment survey. *Invest.opth & vis.sci*, vol 50, 4114-4120, doi:10.1167/iovs.09.3507.
- [18]. Oladehinde M.K., Adeoye A.O., Adegbehingbe B.O., Onakoya A.O., (2007). Visual function of commercial drivers in relation to road accidents in Nigeria. *India. J.occup Environ. Med*: 11(2):71-75. doi: 10.4103/0019-5278:34532 pmc 3163100.
- [19]. Oveneri G.O, Adofo M, (2011). Poor vision, refractive errors and barriers to treatment among commercial drivers in the Cape Coast Municipality. *Africa health science journal* 11(1);97-102.
- [20]. Samuel B., Boadi K., Samuel K., Federick A.A., Andrew O., Agnes A., Charles D., (2015). Visual Function among commercial vehicle drivers in the central region of Ghana. *J. Optom*: 9(1):54-63. doi: 10.1016/j.optom.06.2004.
- [21]. Taylor J.F (1987) Vision and driving. *ophthalmic phisiological optics*. Retrieved online <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.11475-1313.1987.tb0108.x>
- [22]. The New Nigeria (2009) retrieved online from newnigeria.blogspot.com.ng/2009/01/12/12steps-transportation-reforming-roadhtml?m=1.
- [23]. UNIPROJECTS (2015), Health seeking behavior practices among Nigerians-case of UNEC Students. Retrieved from www.uniprojectsearch.
- [24]. Unite for Sight: Module two, (2015) Patients barriers to Eye Care retrieved from www.uniteforsight.org/community-eye-health-course/module2.
- [25]. Wang J.J., Mitchel P., Smith W., (1999). Use of eyecare services by older Australians: The Blue Mountains.

- [26]. Eye study. Aust.NZY Ophthalmol: 27(5):294-300. Retrieved from www.ncbi.nlm.nih.gov/pubmed/10571388
- [27]. World Health Organization (2004). World report on road traffic injury prevention, Geneva Switzerland. WHO. retrieved from apps.who.int/iris/bitstream/10665/42871/1/9241562609.pdf.
- [28]. World Health Organization (2012). Priority eye diseases. blindness and vision impairment prevention.
- [29]. Retrieved online from www.who.int/blindness/causes/priority/en/index.html.
- [30]. Zeleke A. B., (2015). Evaluation of the impact of the information-motivation-behavioral skills model of adherence to antiretroviral therapy in Ethiopia. url: <http://hdl.handle.net.10500/19649>.