

Impact of Instructional Intervention on Improving Dietary Intake of Alcoholics under Rehabilitation in Asumbi Center

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Abstract

Background: Alcoholism is a disorder of severe detrimental impact on the nutritional status of an alcoholic causing malnutrition that impairs the metabolic system and body organs. Sub-optimal dietary intake amongst alcoholics inhibits effective rehabilitation and complete recovery from alcoholism.

Objective: This study aimed at evaluating the impact of instructional intervention on improving the dietary intake of recuperating alcoholics under three months' rehabilitation in Asumbi Center.

Methods: This was an experimental (pre & post) study design of 207 alcoholics under rehabilitation at Asumbi Center recruited within one week of admission and re-assessed after three months of rehabilitation. A food frequency questionnaire was used to collect information on food consumed. Descriptive statistics was calculated as mean \pm SD for the frequency questionnaire data captured on an Excel spread sheet. ANOVA was used to compare the scores of pre-test (baseline) to the corresponding scores of the posttest (intervention) for the frequency questionnaire data.

Results: The mean Food Variety Scores (\pm SD) for all foods consumed from the food groups was 16.02 (\pm 7.43) at baseline, indicating a low food variety, and 67.32 (\pm 34.24) after intervention representing a high food variety. After intervention (88.1%, n=182) were classified with a good dietary diversity score consuming more than 4 food groups while at baseline (77%, n=80) scored a poor dietary diversity score. At follow up, 89.4% (n=185) were eating more than 4 meals/day and 94% (n=195) reported no alcohol craving.

Conclusion: Alcoholics are receptive to instructional messages regarding the importance of nutrition on their health status particularly during rehabilitation and enhancing complete recovery from alcoholism. Dietary intake has a significant role in the effective rehabilitation of alcoholics.

Keywords: Alcoholism; Dietary intake; Food variety; Diet diversity

Introduction

Alcoholism is a major problem in African with a compounded annual growth rate of 6.4% with Kenyans being the largest producer and consumers of beer 44%, spirits/wines 27% in East Africa and local brew which is mostly unreported [1]. Alcohol consumption is rampant at 60% amongst Kenyan youths and has claimed many of their lives [2]. Economic, social and environmental issues are among factors triggering alcoholism amongst people aged 15-65 years [3]. Its impact has undermined development, threatened security, destabilized families, communities and societies [4]. Alcoholism causes physiological disruptions on the entire body as a consequence of decreased dietary intake, impaired nutrient digestion and absorption [5]. The secondary effects include organ system damage such as alcohol induced liver disease, memory loss, impotence and pancreatitis [6]. Alcoholism leads to sub-optimal dietary intake by substituting 'good' calories coming from food with 'bad' calories obtained from alcohol and by altering digestion and absorption of various nutrients. Optimal dietary intake restores the physiological disruptions of the body using the specific nutrients which the brain is wired on that affects how the craving for alcoholism is regulated [7]. In Kenya treatment remains expensive, especially for in-patients who are rehabilitated for three months before discharge. However, the outcome of alcohol treatment reveals uncertainties through the relapse ranges of 60% to 90% after treatment [3,8]. Yet this strategy that can foster healthy lifestyle changes that contribute to long-term maintenance of recovery from alcohol menace. The significance of instructional messages on optimal dietary intake, and the risk of chronic disorders associated with excessive alcohol consumption and poor food choices should be emphasized during alcohol rehabilitation [9]. Schlichting, Boog & Campos [10] argues

that during rehabilitation, recuperating alcoholics maybe receptive to an instructional intervention on importance of optimal dietary intake in improving their health status during recovery from alcoholism. However, evidence shows that the emphasis on optimal dietary intake is very limited in these rehabilitation centers [11,12]. This study intended to evaluate the impact of instructional intervention in improving the dietary intake of recuperating alcoholics undergoing rehabilitation for three months in Asumbi centre.

Materials and Methods

Study area

Asumbi-Homabay located in Homabay County, Nyanza region of Kenya formed the study area mainly because of the existence of Asumbi rehabilitation center. This center was purposively sampled with the target that it receives numerous alcoholic patients both males and females from different parts of the country, offers standardized rehabilitation services to alcoholic rehabilitees and it's accredited by NACADA.

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Study subjects

Recuperating alcoholics admitted at Asumbi rehabilitation center of Homabay County, Kenya were invited to participate in this cross-sectional study from May to July 2016. Written informed consent was obtained for the study, which was conducted before the commencement of this study. Enrolled recuperating alcoholics received a preliminary medical examination, detoxification and further medical and psychological assessment, before the rehabilitation programme was started. During their 3 months of rehabilitation, recuperating alcoholics were offered cognitive-behavioral treatments, goal setting and self-monitoring group meetings, group discussions on family-related issues and educational meetings on psychiatric aspects of alcoholism.

Study design

Respondents' demographic characteristics were obtained from the individual respondent's medical file. A food frequency questionnaire (FFQ) was administered at baseline to gather data on dietary habits before the commencement of the intervention. However other characteristics about the respondents were gathered and the data was recorded. After the first assessment, the intervention included an instructional session about the role of optimal dietary intake in alcohol rehabilitation. A 15-item test was administered before and after the instructional session to assess the respondents' level of knowledge and awareness about the impact of alcohol on their nutritional and health status. In addition, a pamphlet detailed with facts on the role of optimal dietary intake in alcohol rehabilitation developed by researcher was given to each participant. The immediate usefulness of the instructional intervention was verified. The enduring effectiveness was tested after 3 months from the intervention and discharge from the rehabilitation center using a follow up questionnaire including questions about food and alcohol consumption habits.

Data analysis

The completed food frequency questionnaire data was sorted and checked by the researcher. For accuracy and completeness and (n=207) were usable. The data were captured on an Excel spread sheet

by the researcher and then analyzed by using the SPSS for version 17.0. Descriptive statistics including frequencies means and standard deviations were determined. Significance level was set at $\alpha=0.05$. The different dietary diversity measures, referred to as dietary variety, were calculated as follows:

1. Overall variety score (simple count of food items),
2. Variety score between all six food groups and
3. A variety score within every food group.

These scores were calculated for a period of seven consecutive days and were used together to reflect dietary diversity in different ways. The dietary diversity score (DDS) consisted of a simple count of single foods and food groups, similar to [13]. ANOVA was used to determine whether the scores of pre-test (baseline) and the corresponding scores of the posttest (intervention) differed after the intervention (treatment). The six food groups were used for the classification of broad food intakes. A low variety was indicated when less than 30 foods were consumed in a period of 7 days, compared to a medium variety with 30 to 60 foods or high variety with more than 60 foods consumed in the same period [14].

Results

Food variety score within the foods consumed in 3 months of rehabilitation

The six food groups with a count of the single foods within the groups were reported in the food variety score summarized in Table 1. In total, 66 different individual food items were accessible to respondents of Asumbi rehabilitation. However, the total range of individual food items consumed by an individual during the data collection period was between 2-66 foods at baseline and 4-66 foods after intervention. The mean Food Variety Scores (FVS) (\pm SD) for all foods consumed from the food groups was 16.02 (\pm 7.43) at baseline, indicating a low food variety, and 67.32 (\pm 34.24) after intervention representing a high food variety; with p-values of less than 0.05 for the differences (pretest and post-test) of the entire six food groups. The food group with the most variety was the meats and nuts group with

Cereals ^a group=10		Vegetables ^b group=10		Fruits ^c group=15		Meats &nuts ^d group=16		Dairy & it's products ^e group=15		Fats & oils ^f group=4		Total individual food item eaten from all groups N=66	
I	B	I	B	I	B	I	B	I	B	I	B	I	B
0=0	0=0	0=0	0=0	0=0	0=0	0=0	0=0	0=65	0=59	0=0	0=0	0-6=4	0-6=8
1=0	1=0	1=0	1=0	1=0	1=0	1=0	1=0	1=0	1=70	1=54	1=43	7-12=6	7-12=19
2=10	2=90	2=6	2=93	2=2	2=14	2=0	2=3	2=6	2=72	2=23	2=78	13-18=15	13-18=80
3=21	3=83	3=20	3=98	3=2	3=95	3=2	3=86	3=43	3=6	3=40	3=86	19-24=50	19-24=86
4=48	4=24	4=66	4=16	4=65	4=98	4=32	4=82	4=30	4=0	4=90	4=0	25-30=38	25-30=8
5=60	5=10	5=50	5=0	5=12	5=9	5=21	5=36	5=20	5=0			31-36=20	31-36=5
6=66	6=0	6=31	6=0	6=50	6=0	6=9	6=0	6=43	6=0			37-42=11	37-42=1
7=2	7=0	7=34	7=0	7=10	7=0	7=42	7=0	7=0	7=0			43-48=14	43-48=0
8=0	8=0	8=0	8=0	8=20	8=0	8=38	8=0	8=0	8=0			49-56=16	49-56=0
9=0	9=0	9=0	9=0	9=11	9=0	9=20	9=0	9=0	9=0			57-62=17	57-62=0
		10=0	10=0	10=18	10=0	10=21	10=0	10=0	10=0			63-66=16	63-66=0
				11=11	11=0	11=18	11=0	11=0	11=0				
				12=1	12=0	12=1	12=0	12=0	12=0				
				13=2	13=0	13=1	13=0	13=0	13=0				
				14=3	14=0	14=1	14=0	14=0	14=0				
				15=0	15=0	15=1	15=0	15=0	15=0				
						16=0	16=0						

^aDifference was statistically significant: ^a 0.03, ^b 0.01, ^c 0.02, ^d 0.01, ^e 0.02, ^f 0.03

Low = 0-3 food groups or <30 individual foods.

Medium = 4-5 food groups or 30-60 individual foods.

High = 6-9 food groups or >60 individual foods.

Table 1: Food variety within the foods consumed in 3 months rehabilitation period (n=207).

16 food items. This was followed by the fruits and dairy groups with 15 food items respectively. The least popular food group was the dairy group with 31.4 percent (n=65) after intervention and 56.7 percent (n=59) at baseline not consuming dairy and its products during the three months of rehabilitation.

Food variety score within the food group

A summary of the food variety within food groups is presented in Table 2 for both at intervention 67.32 (\pm 34.24) and baseline 26.02 (\pm 11.43) for all the foods consumed from all the food groups in the 3 months period of rehabilitation. At intervention foods consumed indicated a high dietary diversity while at baseline denoted low dietary diversity, with p-values of less than 0.05 for the differences (pre-test and post-test) of the entire six food groups. The meat and nuts group reported the highest individual mean FVS (\pm SD) of 20.42 (\pm 9.03), followed by fruit, dairy, cereal, vegetables groups with 14.31 (\pm 6.34), 8.44 (\pm 3.67), 10.21 (\pm 5.03), 10.15 (\pm 4.67) respectively after intervention. While at baseline, meat and nuts group reported the individual mean FVS (\pm SD) of 8.22 (\pm 4.02), followed by fruit, dairy, cereal, vegetables groups with 6.32 (\pm 2.98), 4.07 (\pm 2.13), 4.32 (\pm 2.09), 4.54 (\pm 1.64) respectively.

Summary of food group diversity

According to Food and Agriculture Organization [14] dietary diversity score (DDS) categorization, consumption of less than 3 food groups is classified as poor dietary diversity, 4-5 food groups is classified as medium dietary diversity and greater or equal to 6 food groups is classified as high dietary diversity. In Table 3 the food group diversity was summarized as the majority of the respondents during intervention (88.1%, n=182) were classified with a good dietary diversity score consuming more than 4 food groups during the rehabilitation period. While at baseline (77%, n=80) was classified with a poor dietary diversity score with consumption of less than 4 food groups during the 3 months of rehabilitation.

The short-term effectiveness of the instructional intervention was shown by an improvement in alcohol and nutrition knowledge of 42.2%, the main progress being related to groups of nutrients (score from 22.6 to 81.3%, $P < 0.05$), impact of optimal dietary intake on the health of recuperating alcoholic (score from 28.7 to 88.6%, $P < 0.05$) and

knowledge of consequences of alcoholism (score from 20.4 to 87.5%). After the intervention, a follow up was conducted with 207 respondents of which 89.4% (n=185) of them had been eating more than 4 meals/day after the intervention and discharge from the rehabilitation center. Furthermore, 94% (n=195) of respondents reported continuous abstinence from alcohol.

Discussion

In this study population, alcoholism was characteristically linked to suboptimal dietary intake, as shown in other recent past studies [9] where chronic alcoholism significantly correlated to poor eating habits including unhealthy diet quality and food choices. This leads to adverse effects on the alcoholic nutritional status by reducing food intake (primary malnutrition) and interfering with digestion, absorption, and metabolism of some nutrients (secondary malnutrition) [7]. The dietary intake of the recuperating alcoholics was measured according to the food variety score (FVS), dietary diversity score (DDS) as indicators of dietary adequacy in relation to nutritional status of alcoholics under rehabilitation at Asumbi center. The findings showed a significant difference existed between pretest scores and post-test scores of p-value < 0.05 . This indicates that instructional messages positively impacted on the recuperation of alcoholics in Asumbi rehabilitation. The (FVS) indicated meat and nuts group to have the highest individual mean FVS (\pm SD) of 20.42 (\pm 9.03), followed by fruit, dairy, cereal, vegetables groups with 14.31 (\pm 6.34), 8.44 (\pm 3.67), 10.21 (\pm 5.03), 10.15 (\pm 4.67) respectively after intervention. While at baseline, meat and nuts group reported the individual mean FVS (\pm SD) of 8.22 (\pm 4.02), followed by fruit, dairy, cereal, vegetables groups with 6.32 (\pm 2.98), 4.07 (\pm 2.13), 4.32 (\pm 2.09), 4.54 (\pm 1.64) respectively. A different dietary sequence of FVS was previously reported from other studies with habitual consumption of cereal items having the highest individual mean while fruits and vegetables recording the least mean [15,16]. The meats and nuts group are significant in diet of a recuperating alcoholic since they yield amino acids: tyrosine and tryptophan which are responsible for the production of the neurotransmitters norepinephrine, dopamine, and serotonin. These compounds are essential for emotional stability, mental clarity, and a general state of well-being of a recuperating alcoholic [9]. This study acknowledges that respondents' diets were diversified after instructional intervention was conducted however dietary adequacy was not considered in this study. The recuperating alcoholics demonstrated a remarkable degree of understanding on the instructional messages conveyed, and significantly increased their knowledge on the importance of optimal dietary intake on their health in alcohol rehabilitation. This study observed that alcoholics' appreciation on the role of optimal dietary intake in alcoholism subsequently led them to restructure their food choices and habits, given that majority of the respondents adopted optimal dietary intake which they retained even after the three months of instructional intervention. These findings suggest that dietary intake instructional intervention should be emphasized during alcohol rehabilitation to facilitate complete alcohol recovery from the menace. Previously, optimal dietary intake has been reported as a pathway that reflects self-care, a commitment to staying sober and a vital adjunct in the complete recovery from alcoholism and reduction of relapse [17,18]. The follow-up findings revealed that majority of recuperating alcoholics continued to abstain from alcohol which has significant clinical implication in alcohol rehabilitation where the need to emphasis optimal dietary intake alongside other treatment strategies should be considered. In support to this argument Singal & Charlton, concurred that optimal dietary intake decreases physiological cravings for alcohol, while also replacing what has been lost of the nutrients in the liver and kidneys as

Food group	Mean		SD		Range of scores	
	I	B	I	B	I	B
Cereals	10.21	4.32	5.03	2.09	2-7	2-5
Vegetables	10.15	4.54	4.67	1.64	2-7	2-4
Fruits	14.31	6.32	6.34	2.98	2-14	3-5
Meats & nuts	20.42	8.22	9.03	4.02	3-15	2-5
Dairy and its' products	8.44	4.07	3.67	2.13	0-6	0-2
Fats & Oils	3.57	1.05	1.31	0.42	1-4	1-3

Difference was statistically significant: *0.03, *0.01, *0.02, *0.01, *0.02, *0.03

Table 2: Summary of food variety score within the food groups (n=207).

No. of food groups consumed n=6	Intervention	Baseline
	n(%)	n(%)
1	8(3.8)	23(11.1)
2	7(3.3)	81(39.1)
3	10(4.8)	92(44.4)
4	70(33.8)	6(2.9)
5	54(26.1)	1(0.5)
6	58(28.2)	4(1.9)
Total	207(100)	104(100)

Table 3: Summary of food group diversity (n=207).

a result of alcoholism, improves sleep and decreases anxiety. Practice of optimal dietary intake is a relevant step in the rehabilitation of recuperating alcoholics since it also reduces the length of hospital stay especially for those who have undergone surgery and transplantation due to the toxic effects of alcohol [9].

Conclusion

This study suggests that well designed instructional interventions conveying information on the role of optimal dietary intake in alcohol rehabilitation extensively restores altered metabolic systems, reduces malnutrition and contributes to the successful recovery from alcoholism.

Authors' Contributions

All authors were involved with the drafting of the research paper, critically reviewed the manuscript and approved the final version submitted for publication.

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