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Efficacy of Health Literacy Intervention in Fostering Family Quality of Life in Oye-Ekiti Local Government Area, Ekiti State, Nigeria

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Abstract

The family quality of life (FQL) in Nigeria has significantly been compromised by the combined effects of economic hardship, insecurities and other uncertainties. The general objective of this study was to evaluate efficacy of a health literacy intervention (HLI) in promoting FQL in Oye-Ekiti, Ekiti state. Specifically, the study determined extent HLI could improve the following indicators of FQL among study participant: adequate sleep, good nutritional behavior, physical activities and proper hygiene. It was a quasi-experimental research involving pretest, intervention, posttest and comparison of pretest and posttest scores. Participants included community-dwelling parents with at least one child (n = 82) in Oye Local Government, Ekiti State, Nigeria. Family Quality of Life scale was used for assessing FQL participants before (pre-test) and three months after (post-test) treatment. Mean, standard deviation, and t-tests were utilized for data analysis. Cohen's d was calculated to establish the effect size of the difference in FQL between pre-test and post-test mean scores, while multiple regression was used to test the hypotheses of no significant interaction effect of socio-demographic parameters on the outcomes of HLI. Significant improvements in adequate sleep ($p < 0.05$), healthy nutritional choices ($p < 0.05$), regular physical activities ($p < 0.05$), and proper hygiene ($p < 0.05$). It was recommended that further research is required to determine whether gains can be sustained over time.

Keywords: Family, Quality of Life, Health, Literacy, Intervention, Nigeria, Health, Household

Introduction

Family quality of life (FQL) may be referred to as the well-being and life satisfaction experienced by family members in the context of daily family living. Brown and Brown (2014)

described it as the degree to which individuals experience their own quality of life within the family context, as well as with how the family as a whole has opportunities to pursue its important possibilities and achieve its goals in the community and the society of which it is a part. Similarly, Vukićević et al. (2023) described FQL as the degree of what makes life good for families. It follows that FQL encompasses the family's collective well-being, capacity to thrive, and overall satisfaction, reflecting both individual and family-level experiences in the broader social context.Some key aspects that determine FQL include; access to healthcare, nutrition, finances, housing, and transportation, as well as effective bonding, communication, social inclusion and emotional wellbeing within the family (Michaelson, Pilato, & Davison, 2021).

For many Nigerian households today, family life seems to have become a daily struggle. Mounting economic troubles poor public health facilities, food crises, and security threats (Aliyu et al., 2020; Innocent et al., 2017; Obi et al., 2020) have created immense challenges for Nigerian households. Insecurity from insurgencies limits open communication (John, 2022), while high unemployment leads families to forgo nutritious food and medical care (Wulanda et al., 2024). Recurring food crises impact millions due to climate change (Özekan, & Akan, 2023), and escalating costs of living discourage exercise and checkups (Maduakolam et al., 2023; Abubakar t al., 2022). Inadequate access to clean water compromises hygiene and disease prevention (Efe et al., 2023). These socioeconomic stressors undermine well-being of families. However, boosting households' health literacy appears a promising approach for improving circumstances in Nigerian homes.

Health literacy (HL) is an important concept that refers to an individual's ability to find, understand, and use health information and services to make informed decisions and take appropriate actions for themselves and others. It refers to the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Ugwu, 2021). It can be regarded as a multidimensional concept with cognitive, functional, interactive, critical, and social components that impact one's ability to engage effectively in health behaviours and contexts.

Efficacy, in the context of health literacy interventions, refers to the extent to which these programmes can produce the desired outcome, such as improved quality of life, under ideal conditions. In other words, efficacy measures the intervention's ability to bring about a positive change in the targeted health behaviour or outcome. This concept is crucial in evaluating the effectiveness of health literacy interventions, as it helps determine whether the program is achieving its intended goals (see methods for measures of efficacy).

Previous studies have explored health literacy interventions' efficacy on quality of life. For instance, Maškanceva (2020) found that a brief health literacy programme significantly improved

sleep quality and duration. In a similar study, Parekh et al. (2018) found that health literacy interventions increased fruit, vegetable, and fiber intake compared to controls. A community-based nutrition program for low-income Hispanic families showed children preferred healthier foods and parents bought more produce at a six-month follow-up. Additionally, similar interventions have been effective in enhancing various aspects of family quality of life, including regular physical activity (Hutzenbiler, 2023), and proper hygiene (Gupta et al., 2020).

While studies have shown that health literacy interventions can positively impact factors like sleep, nutrition and healthcare utilization individually, there remains a literature gap regarding wholistic programmes addressing multiple intersecting family quality of life factors affecting Nigerian households simultaneously. Therefore, this study sought to address this gap.

Objectives of the Study

The general objective of this study was to evaluate efficacy of a health literacy intervention (HLI) in promoting family quality of life (FQL) in Oye-Ekiti, Ekiti state. Specifically, the study determined extent HLI could improve the following indicators of FQL among study participant:

1. adequate sleep
2. good nutritional behaviour
3. physical activities
4. proper hygiene

Methods

Design of the Study:This study employed a quasi-experimental research design using a single group pretest-posttest approach, consisting of four key components: (i) Pretest-administration of the Family Quality of Life Scale to collect baseline data; (ii) Intervention - implementation of the Health Literacy Intervention (HLI) programme; (iii) Posttest - administration of the same scale to collect follow-up data; and (iv) Comparison - comparison of pretest and posttest scores to determine the effect of the HLI programme on family quality of life, allowing for an examination of the program's impact while acknowledging the design's limitations.

***Area of the Study*:** This study was conducted in Oye-Ekiti, a semi-urban community in Ekiti State, Nigeria, with about 175,000 people. The area blends traditional and modern lifestyles, relying on agriculture and emerging industries. Healthcare access varies, impacting families' ability to maintain well-being.

Population for the Study: The study population consisted of approximately 10,000 parents, (mothers and fathers), with at least one child residing within the Oye-Ekiti Local Government Area (LGA) of Ekiti State, Nigeria, (estimated from the 2020 Ekiti State Census). The population characteristics included parents aged 25-55 years, with varying education levels (primary to tertiary), occupations (civil servants, traders, farmers, artisans), and family sizes (1 and above children per household), who were either married or cohabiting. The parents served as primary decision-makers within their families.

***Sample for the Study*:**The sample consisted of 82 parents (40 fathers, 42 mothers) with at least one child in Oye-Ekiti, LGA Ekiti State, Nigeria.

Convenience sampling technique was used for practicality and efficiency. Local organizations collaborated to disseminate information and invite participants. The sample size was determined through power analysis using G*Power software, ensuring sufficient statistical power to detect significant effects. Characteristics of the sample include: gender (male and female), education levels (from no formal education to tertiary education), household income (low, a medium and high) with varying occupations, and family sizes.

Instrument for Data Collection: Instrument for data collection was a 42-item Family Quality of Life Scale (FQLS) which was developed based on literature review and the specific objectives. It consisted of six sections: Section A focused on socio-demographic information (3 items); Section B focused on sleep patterns (9 items); Section C on nutritional choices and dietary habits (10 items); Section D on communication within participants' families (10 items); Section E on hygiene practices (10 items); and Section F on medical check-ups and health monitoring (8 items). The instrument was validated by three experts in Health education.

Reliability of FQLS was established through a pilot test involving 20 parents, who were not part of the final study sample. Cronbach's alpha coefficient was calculated to assess the internal consistency reliability of the whole instrument and each section of it. The overall Cronbach's alpha for the 42-item scale was 0.92, while Section A (socio-demographic information) = 0.78, Section B (adequacy of sleep) = 0.85, Section C (nutritional choices) = 0.88, Section D (family communication) = 0.91, Section E (hygiene practices) = 0.89, and Section F (medical check-ups) = 0.84.

***Method of Data Collection*:** Data collection involved the following:

***Pre-test*:** Before the intervention, participants completed the 42-item Family Quality of Life Scale to establish a baseline measure of their Family Quality of Life (FQL). This pre-test data collection took place at the Oye Civic Centre, where research assistants were available to provide assistance as needed. The research team ensured participants' privacy, confidentiality, and autonomy throughout the process.

***Intervention*:** Following the pre-test, the Health Literacy Intervention programme was delivered to participants at the Oye Civic Centre. The programme consisted of lectures, discussions, and hands-on activities aimed at enhancing knowledge, attitude, and behavioural intentions related to improving FQL. The research team created an enabling environment conducive to learning, ensuring participants' comfort and engagement throughout the intervention.

***Post-test*:** Four months after the intervention, participants completed the same 42-item Family Quality of Life Scale to assess any changes in their FQL. This post-test data collection took place at the same venue as the pre-test, with research assistants available to provide assistance as needed. The research team maintained the same ethical standards as during the pre-test.

***Method of Data Analysis*:** Mean and standard deviation, were used to analyse both pretest and posttest data.

The mean difference between the pretest and posttest FQL scores was set as the yardstick for measuring improvement or otherwise. Magnitude of intervention's efficacy, was determined using Cohen's d, a measure of effect size, based on the difference in pretest and posttest FQL mean scores.

Results

Socio-demographic Characteristics of the Study Participants

There is a relatively even gender distribution, with 48.8 percent male and 51.2 percent female participants. In terms of education level, the majority of participants had secondary (34.1%) or tertiary (29.3%) education, while 12.2 percent had no formal education and 24.4 percent had primary education. Regarding household income, the largest proportion of participants (34.1%) had an annual income between ₦300,000 and ₦700,000, followed by 31.7 percent with an income between ₦100,000 and ₦300,000. A smaller percentage (22.0%) had a household income below ₦100,000 per year, and 12.2 percent had an annual income above ₦700,000.

Table 1: Mean Scores, and Standard Deviation, t-test Value and Cohen's d on Sleep Behaviours Before and After the HLI

Sleep Behaviour	$\bar{X}_1 \pm SD$	$\bar{X}_2 \pm SD$	δ	t-value	p-value	Cohen's d
Caffeine and Stimulants Avoidance	3.41 ± 1.27	4.72 ± 1.04	1.31	8.32**	0.004	1.12
Bedtime Routine Establishment	2.98 ± 1.42	4.35 ± 1.16	1.37	7.91**	0.021	1.07
Screen Time Limitation	2.84 ± 1.35	4.27 ± 1.09	1.43	8.57**	0.025	1.16
Sleep Environment Optimization	3.12 ± 1.38	4.61 ± 1.07	1.49	8.74**	0.031	1.18
Avoidance of Heavy Meals	3.27 ± 1.33	4.53 ± 1.11	1.26	7.67**	0.006	1.03
Relaxation Techniques Engagement	2.91 ± 1.40	4.42 ± 1.14	1.51	8.73**	0.014	1.18
Consistent Sleep Schedule Maintenance	3.19 ± 1.36	4.49 ± 1.12	1.30	7.87**	0.032	1.06
Sleep Prioritization	3.05 ± 1.39	4.58 ± 1.09	1.53	8.93**	0.001	1.21

Note: ** $p < 0.001$; $\bar{X}_1$ = Pretest mean; $\bar{X}_2$ = Posttest mean; SD = Standard deviation; δ Mean difference

Table 1 presents the results of sleep behaviours before and after the intervention. Pre-test mean scores ranged from 2.84 to 3.41, while post-test means increased to 4.27 to 4.72. The mean differences were substantial, ranging from 1.26 to 1.53, and all were statistically significant ($p < 0.001$). The effect sizes were large, with Cohen's d values ranging from 1.03 to 1.21, indicating a strong and practically meaningful impact of the training.

These findings suggest the targeted intervention was highly effective in enhancing the participants' sleep-related knowledge, attitudes, and practices.

Table 2: Mean Scores, and Standard Deviation, t-test Value and Cohen's d on Nutritional Behaviours Before and After the HLI

Dietary Behaviour	$\bar{X}_1 \pm SD$	$\bar{X}_2 \pm SD$	δ	t-value	p-value	Cohen's d
Fruit and Vegetable Consumption	3.24 ± 1.31	4.68 ± 1.02	1.44	8.84**	0.041	1.19
Whole Grains Intake	2.89 ± 1.37	4.40 ± 1.15	1.51	8.89**	0.001	1.20
Lean Protein Sources	3.15 ± 1.34	4.54 ± 1.09	1.39	8.41**	0.033	1.14
Limiting Sugary Foods and Beverages	3.02 ± 1.38	4.47 ± 1.12	1.45	8.61**	0.021	1.16
Healthy Fat Choices	3.07 ± 1.35	4.51 ± 1.10	1.44	8.62**	0.013	1.16
Hydration Status	3.31 ± 1.30	4.72 ± 1.01	1.41	8.77**	0.002	1.18
Portion Control and Moderation	2.96 ± 1.39	4.43 ± 1.14	1.47	8.65**	0.012	1.17
Dietary Diversity	3.19 ± 1.33	4.62 ± 1.05	1.43	8.71**	0.030	1.17
Minimizing Processed and Ultra-Processed Foods	3.08 ± 1.36	4.49 ± 1.11	1.41	8.48**	0.001	1.15
Nutritional Knowledge and Awareness	3.14 ± 1.35	4.55 ± 1.08	1.41	8.53**	0.003	1.15

Note: ** $p < 0.001$; $\bar{X}_1$ = Pretest mean; $\bar{X}_2$ = Posttest mean; SD = Standard deviation; δ Mean difference

Table 2 shows that there are improvements in all targeted dietary behaviours following the training intervention. At pre-test, mean scores ranged from 2.89 ± 1.37 (Whole Grains Intake) to 3.31 ± 1.30 (Hydration Status), while at post-test, means increased to a range of 4.40 ± 1.15 (Whole Grains Intake) to 4.72 ± 1.01 (Hydration Status). The mean differences were substantial, ranging from 1.39 to 1.51, and all were statistically significant ($p < 0.001$) based on the t-test results. The effect sizes, as measured by Cohen's d, were large, ranging from 1.14 to 1.20, indicating a strong and practically meaningful impact of the dietary behaviour training. These findings suggest the targeted intervention was highly effective in enhancing the participants' knowledge, attitudes, and practices related to a wide range of healthy dietary behaviours.

Table 3: Mean Scores, and Standard Deviation, t-test Value and Cohen's d on Physical Activities Before and After the HLI

Physical Activity	$\bar{X}_1 \pm SD$	$\bar{X}_2 \pm SD$	Δ	t-value	p- value	Cohen's d
1. Aerobic Exercise	3.02 ± 1.38	4.45 ± 1.13	1.43	8.56**	0.0001	1.16
2. Strength Training	2.84 ± 1.41	4.32 ± 1.18	1.48	8.61**	0.0041	1.16
3. Flexibility and Stretching	3.11 ± 1.35	4.51 ± 1.10	1.40	8.38**	0.0001	1.13

Table 3 continued

4. Daily Steps	3.19 ± 1.33	4.59 ± 1.06	1.40	8.49**	0.0203	1.15
5. Active Transportation	2.93 ± 1.40	4.39 ± 1.16	1.46	8.53**	0.0027	1.15
6. Recreational Activities	3.07 ± 1.36	4.47 ± 1.12	1.40	8.41**	0.0013	1.14

Note: ** $p < 0.001$; $\bar{X}_1$ = Pretest mean; $\bar{X}_2$ = Posttest mean; SD = Standard deviation; δ Mean difference

Table 3 show that there are progresses in all targeted physical activities following the intervention programme. At pre-test, mean scores ranged from 2.84 ± 1.41 (Strength Training) to 3.19 ± 1.33 (Daily Steps), while at post-test, means increased to a range of 4.32 ± 1.18 (Strength Training) to 4.59 ± 1.06 (Daily Steps). The mean differences were substantial, ranging from 1.40 to 1.48, and all were statistically significant ($p < 0.001$) based on the t-test results. The effect sizes, as measured by Cohen's d, were large, ranging from 1.13 to 1.16, indicating a strong and practically meaningful impact of the physical activity behavior training.

Table 4: Mean Scores, and Standard Deviation, t-test Value and Cohen's d on Hygiene Behaviour Before and After the HLI

Hygiene Behavior	$\bar{X}_1 \pm SD$	$\bar{X}_2 \pm SD$	δ	t-value	p- value	Cohen's d
Hygiene	3.24 ± 1.31	4.60 ± 1.04	1.36	8.25**	0.0041	1.11
Dental Hygiene	3.17 ± 1.34	4.54 ± 1.08	1.37	8.27**	0.0041	1.12
Personal Hygiene	3.31 ± 1.29	4.63 ± 1.02	1.32	8.19**	0.033	1.10
Food Hygiene	3.14 ± 1.35	4.51 ± 1.10	1.37	8.28**	0.021	1.12
Respiratory Hygiene	3.22 ± 1.32	4.58 ± 1.05	1.36	8.24**	0.013	1.11
Sleep Hygiene	3.28 ± 1.30	4.61 ± 1.03	1.33	8.21**	0.004	1.11
Skin Hygiene	3.19 ± 1.33	4.55 ± 1.08	1.36	8.25**	0.022	1.11
Toilet Hygiene	3.26 ± 1.30	4.59 ± 1.04	1.33	8.20**	0.030	1.11
Laundry Hygiene	3.13 ± 1.35	4.50 ± 1.11	1.37	8.29**	0.021	1.12

Note: ** $p < 0.001$; $\bar{X}_1$ = Pretest mean; $\bar{X}_2$ = Posttest mean; SD = Standard deviation; δ Mean difference

Table 4 show that there are improvements in all hygiene behaviours following the intervention. At pre-test, mean scores ranged from 3.09 ± 1.37 (Environmental Hygiene) to 3.31 ± 1.29 (Personal Hygiene), while at post-test, means increased to a range of 4.47 ± 1.13 (Environmental Hygiene) to 4.63 ± 1.02 (Personal Hygiene). The mean differences were substantial, ranging from 1.32 to 1.38, and all were statistically significant ($p < 0.001$) based on the t-test results. The effect sizes, as measured by Cohen's d, were large, ranging from 1.10 to 1.12, indicating a strong and practically meaningful impact of the hygiene behaviour training.

Discussion

Findings of this study have demonstrated that the multicomponent HLI led to significant improvements across a range of health-related behaviours and practices among participants, which have the potential to enhance their overall family quality of life.

Previous studies have explored health literacy interventions' effects on quality of life. For instance, Maškanceva (2020) found that a brief health literacy programme significantly improved sleep quality and duration. In a similar study, Parekh et al. (2018) found that health literacy interventions increased fruit, vegetable, and fiber intake compared to controls. A community-based nutrition program for low-income Hispanic families showed children preferred healthier foods and parents bought more produce at a six-month follow-up. Additionally, similar interventions have been effective in enhancing various aspects of family quality of life, including regular physical activity (Hutzenbiler, 2023), and proper hygiene (Gupta et al., 2020).

Specifically, this study demonstrated that there are significant improvements in all targeted sleep behaviours following the training intervention are expected based on previous research in this area, which has consistently shown that sleep-focused interventions can be effective in enhancing various sleep-related habits and practices at the individual level, with educational programs teaching sleep hygiene principles, strategies for establishing consistent bedtime routines, and techniques for improving sleep quality leading to marked increases in sleep duration, sleep efficiency, and overall sleep health (Scott et al., 2021; Steffen et al., 2015). One study revealed that a cognitive-behavioural therapy programme for insomnia resulted in significant improvements in self-reported sleep quality, daytime functioning, and overall sleep satisfaction (Järnefelt et al., 2020).

This study also found that there are improvements in all targeted dietary behaviours following the training intervention. These improvements are expected in that previous research has consistently shown that nutrition-focused interventions can be effective in enhancing various dietary habits and food-related behaviours. For instance, intervention programmes of this nature have previously led to marked increases in the consumption of fruits, vegetables, whole grains, and other nutrient-dense foods (Pretorius et al., 2021; Thompson et al., 2016; Troesch et al., 2015). Similarly, another study has revealed that a community-based nutrition programme resulted in significant increases in the variety and quantity of fruits and vegetables consumed (Ezekekwu et al., 2022).

Furthermore, this study revealed that there are improvements in all targeted physical activity behaviours following the training intervention. This result is expected based on previous research in this area, which has consistently shown that physical activity-focused interventions can be highly effective in enhancing the frequency, duration, and intensity of physical activities (Kilgour et al., 2022; Pfisterer et al., 2022).

Similarly, this study shows that the HLI was highly effective in driving significant improvements across multiple targeted hygiene practices. For example, the data showed substantial increases in mean scores for domains such as Personal Hygiene and Environmental Hygiene, with large effect sizes indicating the training had a

strong and practically meaningful impact on participants' behaviors. These findings build upon prior research showing the efficacy of targeted training programmes in promoting meaningful and lasting changes in individual and community-level hygiene practices (Watson *et al*., 2021). The study contributes valuable evidence supporting the use of health literacy training as an effective strategy for enhancing hygiene behaviours and improving public health outcomes

Conclusion

The findings from this study provide strong evidence for the efficacy of the Health Literacy Intervention (HLI) in driving positive changes across multiple domains critical for promoting family quality of life. The HLI was found to significantly improve participants' sleep behaviours, health nutritional choices, regular physical exercises, hygiene, and regular medical checkups. By targeting an interconnected set of health behaviours through a holistic approach, the HLI appears to have fostered a broader orientation towards health-conscious practices that has the potential to improve overall quality of life in a sustainable manner.

Recommendation

Based on the findings from this study, several key recommendations can be made:

1. Adopting and scaling up holistic interventions like the HLI to empower individuals to manage their health, improving sleep behaviors, preventive care, and health-conscious practices.
2. Future HLIs should prioritize enhancing sleep habits as a core component, addressing bidirectional relationships between sleep and other health behaviours for comprehensive benefits.
3. Conducting longitudinal studies and economic analyses to assess long-term sustainability and cost-savings of HLIs, informing policy decisions and promoting widespread adoption.
4. Designing future HLIs with cultural relevance and accessibility in mind, engaging diverse communities to ensure interventions meet unique needs and preferences.

References

Abubakar, I., Dalglish, S. L., Angell, B., Sanuade, O., Abimbola, S., Adamu, A. L., & Zanna, F. H. (2022). The Lancet Nigeria Commission: investing in health and the future of the nation. *The Lancet*, *399*(10330), 1155-1200.

Alcaraz, K. I., Wiedt, T. L., Daniels, E. C., Yabroff, K. R., Guerra, C. E., & Wender, R. C. (2020). Understanding and addressing social determinants to advance cancer health equity in the United States: a blueprint for practice, research, and policy. *CA: a cancer journal for clinicians*, *70*(1), 31-46.

Aliyu, U. A., Kolo, M. A., & Chutiyami, M. (2020). Analysis of distribution, capacity and utilization of public health facilities in Borno, North-Eastern Nigeria. *Pan African Medical Journal*, *35*(1).

Brown, R.I., Brown, I. (2014). Family Quality of Life. In: Michalos, A.C. (eds) *Encyclopedia of Quality of Life and Well-Being* Research. Springer, Dordrecht.

Efe, E. E., Ahmed, E. H., Sabo, A. M., & Odonye, O. J. (2023). Ripples of infection: unravelling the effect of waterborne diseases on health outcome in delta state, Nigeria. *Scholarly Journal of Social Sciences Research*, *2*(10), 1-17.

Etim, E., & Duke, O. (2017). The implications of food insecurity, poverty and hunger on Nigeria's national security. *Asian Research Journal of Arts & Social Sciences*, *4*(2), 1-10.

Ezekekwu, E., Salunkhe, S. S., Jennings, J. A. C., & Kelly Pryor, B. N. (2022). Community-based and system-level interventions for improving food security and nutritious food consumption: a systematic review. *Journal of Hunger & Environmental Nutrition*, *17*(2), 149-169.

Fasakin, T. O. (2018). *Informal Settlement in Lagos State: A Framework for Investigating Housing Quality* (Doctoral dissertation, Environmental Design).

Gupta, V., Kumar, R., Sood, U., & Singhvi, N. (2020). Reconciling hygiene and cleanliness: a new perspective from human microbiome. *Indian journal of microbiology*, *60*(1), 37-44.

Hoffmann, A. O., & Risse, L. (2020). Do good things come in pairs? How personality traits help explain individuals' simultaneous pursuit of a healthy lifestyle and financially responsible behavior. *Journal of Consumer Affairs*, *54*(3), 1082-1120.

Hutzenbiler, A. (2023). *A Mixed-Methods Exploration of Quality of Life in Forensic Inpatients with Schizophrenia Spectrum Disorders on the Social Learning Program* (Docdissertation, Antioch Univ).

Innocent, E. O., Olise, T. S., & Nnamdi, C. (2017). Security threats in Nigeria: A thematic Exposition. *international journal of philosophy and social-psychological sciences*, *3*(1-2017), 21-39.

Järnefelt, H., Härmä, M., Sallinen, M., Virkkala, J., Paajanen, T., Martimo, K. P., & Hublin, C. (2020). Cognitive behavioural therapy interventions for insomnia among shift workers: RCT in an occupational health setting. *International archives of occupational and environmental health*, *93*(5), 535–550. https://doi.org/10.1007/s00420-019-01504-6

John, O. K. (2022). *The Threat of Insurgency to Peace and Security in West Africa: Nigeria in Perspective* (Doctoral dissertation, School of International and Area Studies, Goa University).

Kilgour, G., Adair, B., Stott, N. S., Steele, M., Hogan, A., & Imms, C. (2022). Do physical activity interventions influence subsequent attendance and involvement in physical activities for children with cerebral palsy: a systematic review. *Disability &Rehabilitation*, *44*(9),1682-1698.

Kim, A., & Woo, K. (2022). Gender differences in the relationship between informal caregiving and subjective health: the mediating role of health promoting behaviours. *BMC Public Health*, *22*(1), 311.

Maduakolam, I. O., Osude, C. P., Ede, S. S., Onyekachi-Chigbu, A. C., Osuorah, C. S., & Okoh, C. F. (2023). Knowledge, Attitude and Practice of Physical Exercise among Elderly People in Enugu Metropolis, Nigerian. *Physical Activity and Health*, *7*(1), 53-63.

Maškanceva, L. (2020). *Developing understandable and actionable sleep data visualizations* (Bachelor's thesis, University of Twente).

Michaelson, V., Pilato, K. A., & Davison, C. M. (2021). Family as a health promotion setting: A scoping review of conceptual models of the health-promoting family. *PloS one*, *16*(4), e0249707. https://doi.org/10.1371/journal.pone.02

Obi, C., Bartolini, F., & D'Haese, M. (2020). International migration, remittance and food security during food crises: the case study of Nigeria. *Food Security*, *12*(1), 207-220.

Özekan, D., & Akan, H. D. M. (2023). *Climate Change and Food Security*. Hiperlink Eğitim İletişim Yayın Gıda Sanayi ve Pazarlama Tic. Ltd. Şti..

Parekh, N., Jiang, J., Buchan, M., Meyers, M., Gibbs, H., & Krebs, P. (2018). Nutrition literacy among cancer survivors: feasibility results from the Healthy Eating and Living Against

Breast Cancer (HEAL-BCa) study: a pilot randomized controlled trial. *Journal of Cancer Education*, *33*, 1239-1249.

Pfisterer, J., Rausch, C., Wohlfarth, D., Bachert, P., Jekauc, D., & Wunsch, K. (2022). Effectiveness of Physical-Activity-Based Interventions Targeting Overweight and Obesity among University Students-A Systematic Review. *International Journal of Environmental Research and Public Health*, *19*(15), 9427. https://doi.org/10.3390/ijerph19159427

Pretorius, B., Ambuko, J., Papargyropoulou, E., & Schönfeldt, H. C. (2021). Guiding nutritious food choices and diets along food systems. *Sustainability*, *13*(17), 9501.

Scott, A. J., Webb, T. L., Martyn-St James, M., Rowse, G., & Weich, S. (2021). Improving sleep quality leads to better mental health: A meta-analysis of randomised controlled trials. *Sleep Medicine Reviews*, *60*, 101556..

Sharma, N., Chakrabarti, S., & Grover, S. (2016). Gender differences in caregiving among family - caregivers of people with mental illnesses. *World Journal of Psychiatry*, *6*(1), 7–17. https://doi.org/10.5498/wjp.v6.i1.7

Steffen, M. W., Hazelton, A. C., Moore, W. R., Jenkins, S. M., Clark, M. M., & Hagen, P. T. (2015). Improving sleep: outcomes from a worksite healthy sleep program. *Journal of Occupational and Environmental Medicine*, *57*(1), 1-5.

Thompson, D., Ferry Jr, R. J., Cullen, K. W., & Liu, Y. (2016). Improvement in fruit and vegetable consumption associated with more favorable energy density and nutrient and food group intake, but not kilocalories. *Journal of the Academy of Nutrition and Dietetics*, *116*(9), 1443-1449.

Troesch, B., Biesalski, H. K., Bos, R., Buskens, E., Calder, P. C., Saris, W. H., ... & Eggersdorfer, M. (2015). Increased intake of foods with high nutrient density can help to break the intergenerational cycle of malnutrition and obesity. *Nutrients*, *7*(7), 6016-6037.

Vukićević, A., Švraka, E., Hadžiomerović, A. M., & Salkić, N. (2023). Quality of life of families with children with intellectual and developmental disabilities: Family health domain. Journal of Health Sciences, 13(2), 91-97,

Ugwu, N. F. (2021). E-Option for Health Education Amidst COVID-19: An Examination of Somalia Contexts. *International Studies in Educational Administration (Commonwealth Council for Educational Administration & Management (CCEAM),* 49(1), 86-93.

Watson, J., Cumming, O., MacDougall, A., Czerniewska, A., & Dreibelbis, R. (2021). Effectiveness of behaviour change techniques used in hand hygiene interventions targeting older children–a systematic review. *Social Science & Medicine*, *281*, 114090.

Wulanda, A., Dalimunthe, R. F., & Lumbanraja, P. (2024). The Role of Digital-Based Entrepreneurship In Reducing The Unemployment Rate: A Literature Review. *Musytari: Neraca Manajemen, Akuntansi, dan Ekonomi*, *5*(1), 81-90