Health Promoting Lifestyle Program among Railway Train Drivers for Preventing Occupational Health Hazards

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Abstract

Background: Railway train drivers operate under unique working conditions that often include long hours of driving, shift work, and high-stress levels, which can lead to several health concerns. **The aim**: This study aimed to evaluate the effect of health promoting lifestyle program among railway train drivers for preventing occupational health hazards. **Research design:** A quasi-experimental research design was used. **Setting:** Wardan Training Institute of the Egyptian National Railways for train drivers. **The sample**: Simple random sample was used, included 300 train drivers were chosen randomly. **Tools**: Three tools were used. **Tool (1):** Structured interviewing questionnaire, consisted of three parts **I:-**Socio-demographic characteristics of train drivers. **II:-** Medical history (Physical illness, Psychological disorders). **III:-** Knowledge about occupational health hazards, first aids and health promoting lifestyle. **Tool (2):** Health promoting lifestyle profile. **Tool (3):** An observational checklist to evaluate train drivers' practices regarding application of first aids. **Results:** 52.7% of studied railway train drivers their age ranged between 45<50. 48% of them suffered from hypertension. 50% of them suffered from anxiety. 7% of studied railway train drivers had good total level of knowledge pre-program that improved to 66% post-program. 29% of them had healthy total lifestyle pattern pre-program that improved to 74.7% post- program. 24.3% of them had satisfactory total first aid practices pre- program that improved to 85.7% post-program. There were statistically significant positive correlations between railway drivers' total knowledge, total health promoting lifestyle and total first-aid practices pre- program while there were highly statistically significant positive correlations between railway train drivers' total knowledge, total health promoting lifestyle and total first-aid practices post-program. **Conclusion**: Health promoting lifestyle program succeeded to improve knowledge, practices of first aid and lifestyle pattern of studied railway train drivers. **Recommendations**: Health education program for newly railway drivers before starting driving regarding types of occupational health hazards, safety measures, emergency plan and crises management.

Keywords: Health Promoting Lifestyle, Occupational Health Hazards, Railway Train Drivers.

Introduction:

Train driving is an important and safety critical job within railway system. Train driver has to deal with a high level of demands and responsibilities. It is a kind of job which requires many cognitive functions such as sustained attention, object detection and recognition, memory, planning, decision-making, and workload management. The job of a train driver requires high professional competence and good state of mental and physical health. These allow the driver to deal

effectively with the risks arising from the requirements of the work environment (for example, the monotony of the environment and work responsibilities, vibration and noise) and psychological requirements (involvement in traumatic accidents) **(Hoe et al., 2023).**

Nowadays, railway plays a special role amongst various transport systems. Despite the high level of safety in rail system, rail accidents negatively impact the organization, victims, and surrounding communities and result in loss of lives and severe adverse economic effects. The costs of rail accidents are considerably high and identifying the underlying causes of these accidents will enhance the quality and efficiency of rail transport system. The Federal Railroad Administration (FRA) reports that nearly 45,000 railroad accidents or incidents occurred from 2017 to 2021, consisting of more than 3,200 death and over 31,000 injuries (**Egyptian National Railway (ENR), (2023).**

Universally approximately 30% to 50% of workers reported exposure to occupational health hazards in work site (physical, chemical, ergonomic and biological). An estimated 120 million of occupational injuries resulting in 200.000 fatalities occur annually along with approximately 68 to 157 million new cases of occupational diseases. Yearly, more than 1.8 million workers reported musculoskeletal disorders such as carpal tunnel syndrome and back injuries in 600.000 of these cases. The disorders are serious enough that workers take time off from work (**Centeral Agency for Public Moblization and Statistics (CAPMS), 2023).**

Train drivers in railway transport are exposed to physical, chemical, and biological harmful factors, as well as psychophysiological factors, which can lead to disruptions in cardiovascular, central nervous, and endocrine systems. The most common health issues train drivers are facing are; obesity and stress, which can lead to high blood pressure and diabetes, poorly designed work spaces which can cause back and neck injuries, highest rate of musculoskeletal injuries, exposure to hazardous chemicals, work atmosphere laced with diesel fumes which can cause chronic lung problems, high number of fatal injuries, extreme fatigue, dependence on stimulants to stay awake, depression and loneliness from isolation on the job and sleep apnea **(Daiber et al., 2022).**

Health-promoting lifestyle has been defined as 'a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual'. Health promoting behaviors include health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. A health promoting lifestyle is an important determinant of health status and is recognized as a major factor for the maintenance and improvement of health **(Haddad et al., 2021).**

Occupational Health Nurses (OHNs) play an important role in the railway system as to observe and assess train drivers' health status with respect to job tasks and hazards. Using specialized experience and education, they also responsible for disease management, environmental health, emergency planning, train drivers treatment, follow-up and referrals, emergency care for job-related injuries and illnesses and rehabilitation for return-to-work issues. OHNs counsel train drivers about work-related illness and injuries and emotional and/or family problems. They refer train drivers to other community resources, handle and coordinate follow-up care. Occupational Health Nurses can conduct health education sessions focusing on the importance of lifestyle choices in preventing health issues. They encourage train drivers to take responsibility for their own health, such as smoking cessation,

exercise/fitness, nutrition and weight control, stress management, control of chronic illnesses and effective use of medical services **(Spreitzer et al., 2023).**

Significance of the study:

Egyptian National Railways (ENR) is considered to be the first railway lines established in Africa and the Middle East. Egypt is the second country to have railways in the world just after the United Kingdom. ENR is considered most important foundation in the field of passenger transportation in Egypt and in the Middle East since more than one hundred and fifty years. Nowadays Egypt has 28 rail lines, where their total length is about 9435 km and the annual No. of passengers has come to 800 million. ENR consider the largest in transportation of passengers and freight, and is considered the backbone for transportation people in Egypt, where the volume of passenger transport by rail about 1.5 million passenger daily, and 12 million ton of freight **(Gatarić et al., 2023).**

The railway sector plays a significant role in the Egyptian economy and is an essential mode of transport for low-income people. According to ENR, the total number of railway accidents in Egypt from 2014 until 2020 was 6,843 that is high number of accidents, and the latest four years from 2017 to 2020 there have been more than 1,000 accidents yearly, specially in 2017 which have the largest number of accidents. the worth mentioning that 2017 is the year that witnessed 1657 accidents left 61 injured and 29 deeds **(Merkulov& Godyaev, 2022).**

Aim of the study: This study aimed to evaluate the effect of health promoting lifestyle program among railway train drivers for preventing occupational health hazards

Research Hypotheses:

1- Knowledge and practices of railway train drivers improved after implementing the health promoting lifestyle program for preventing occupational health hazards.

2- Railway train drivers' lifestyle pattern improved after implementation of the program.

Subjects and methods:

Research design:

A quasi experimental research design was utilized to conduct this study .

Setting:-

The study was conducted at Wardan Training Institute of the Egyptian National Railways for train drivers. The institute is located in the Giza Governorate, in the town of Wardan, 50 km northwest of Cairo.

Sampling:-

Simple random sample was taken which include 300 train drivers were chosen randomly from 600 train drivers who attained for training per year from the previously mentioned setting as they represent 50% of the total.

Tools of data collection: Three tools were used in this study:

Tool I: A structured interviewing questionnaire was developed by the researchers, which cover the following three parts:-

The first part: Socio-demographic characteristics of the studied railway train drivers which included 6 questions (age, education, occupation, marital status, residence and monthly income).

The second part: Medical history of studied railway train drivers which consisted of physical illness and psychological disorder. A- Physical illness as: Hypertension, heart disease, diabetes, respiratory disease, kidney disease, liver disease and musculoskeletal disease.

B- Psychological disorders as: Anxiety, tension, nervousness, lack of concentration, depression, psychological stress, personality disorders, post-traumatic stress disorders and obsessive-compulsive disorders.

The third part: It was concerned with railway train drivers' knowledge regarding:

A- Occupational health hazards which consisted of 6 questions included (meaning, types, factors causing, causes of train accidents, effect of occupational health hazards on railway drivers and methods of preventing it).

B- First aid which consisted of 20 questions included (meaning, purpose, principles, qualities of first aider, component of first aid kit, meaning of Cardio Pulmonary Resuscitation (CPR), cases requiring CPR, meaning of wound, types of wound, wounds requiring transfer to hospital, meaning of bleeding, types of external bleeding, manifestations of internal bleeding, meaning of fracture, manifestations of fractures, meaning of shock, manifestations of shock, meaning of burn, degrees of burn and signs of severe burn).

C- Health promoting lifestyle consisted of 10 questions included (meaning, benefits, problems that results from not following healthy life style, items of health promoting lifestyle, meaning of physical activity, meaning of health nutrition, meaning of health responsibility, meaning of social support, meaning of stress management and meaning of spiritual growth).

Scoring system:

The scoring system for railway train driver's knowledge was calculated as follows 2 score for a correct and complete answer, while 1 score for a correct and incomplete answer, and 0 for an incorrect and incomplete answer. These scores of the items were summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a present score. Train drivers total knowledge score was classified as the following: Total scores of knowledge = 72 points.

• Good when the total score was 75% to 100% (≥ 54 points).

• Average when the total score was 50 to less than 75% (36 < 54 points)

• Poor when the total score was less than 50% (< 36 points).

Tool (II): Health Promoting Lifestyle Profile-II (HPLP-II): it is a 48- items questionnaire adapted from **Walker et al., (1987).** It is composed of six subscales included (Health responsibility which consisted of 7 items, physical activity which consisted of 6 items, nutrition which consisted of 9 items, spiritual growth which consisted of 9 items, interpersonal relation which consisted of 9 items, stress management which consisted of 8 items).

Scoring system:

Items of (HPLP-II) scale were based on a 3-point Likert scale with three possible responses: 2=Always, 1=sometimes and 0 = never. The total score of health-promoting lifestyle was obtained by calculating the mean of responses to all the 48 items. In addition, the total score of each subscale was computed by calculating the mean of responses to that subscale's items. Overall, HPLP-II scores calculated as follow: Total score health promoting lifestyle profile II = 96 .

• Healthy when the total score was ≥ 60% = (> 58).

• Unhealthy when the total score was < 60% = (< 58).

Tool (III): An observational checklist was used to observe train drivers practices level regarding application of first aids, CPR (13 items), wound and bleeding (13 items), shock (11 items), burns (10 items) and fracture (10 items).

Scoring system:

The scoring system for train drivers practices was as follows:

1= Done 0= Not done

• The total practices score = 57

• The total practices score was considered satisfactory if the score was ≥ 60% (≥ 34 score) and considered unsatisfactory if it < 60% (< 34 score).

Validity of tools:

The tools validity was checked and revised by five experts from Community Health Nursing Department, Faculty of Nursing in Benha University who reviewed the tools for clarity, relevance, comprehensiveness, understanding and applicability and the modifications were done accordingly based on their responses.

Reliability test:

Reliability of the tool was applied by the researchers for testing the internal consistency of the tool. The reliability was done by Cranach's Alpha coefficient test which revealed that each of the three tools consisted of relatively homogenous items as indicated by the moderate to high reliability of each tool. The internal consistency of the knowledge was 0.76 and for practices were 0.82.

Ethical Approval:

The ethical approval was obtained from Research Ethical Committee at Faculty of Nursing, Benha University and all ethical issues were assured; oral consent has been obtained from each train drivers before conducting the interview and given them a brief orientation to the purpose of the study. Train drivers were also reassured that all information gathered would be confidentially and used only for the purpose of the study. The train drivers had right to withdraw from the study at any time without giving any reasons.

Administrative approval:

Approvals to conduct the study and implementation of the program was obtained by submission of an official letter issued from Dean of Faculty of Nursing, Benha University to the directors of Wardan Training Institute of the Egyptian National Railways for train drivers to obtain their permission to visit the training institute. Director was informed about time and date of data collection, and the oral consent from the train drivers to conduct the study. The title, objectives, tools and the study technique were illustrated for cooperation.

Pilot study:

The pilot study was conducted on 10% (30 train drivers) from the total sample. The pilot study was aimed to test the content, clarity, applicability and simplicity of the tool using the interviewing questionnaire and the observational checklist as a pre-test. The estimation time needed to fill tools consumed about 30 minutes. No modifications were done, so the pilot study sample was included in the total sample.

Health promoting lifestyle program: The researchers implemented the program through 4 phases as the following:

(I) Preparatory and assessment phase:

Preparation of the study design and data collection tools was based on extensive review of the current and past available national and international references related to the research title was done, using a journal, textbooks and internet search was done. This was necessary for the researchers to be acquainted with and oriented about aspects of the research problem as well as to assist in the development of data collection tools. Also prepared handout for studied railway train drivers that included all items about occupational health hazards, health promoting lifestyle and first aid was given as a gift for each train drivers to use it as a future reference, this took about two months for preparing the tools. In this phase of the health promoting lifestyle program, assessed knowledge, practices and lifestyle pattern of the studied railway train drivers through collection and analysis of baseline data from the filled tools. In this phase the researchers did the pre-test.

(II) Planning phase: The researchers identified the important needs for target group,

set priorities of needs, goals and objectives were developed and clearance of general and specific objectives as follow:

General objective of the program was to improve the train drivers' knowledge and practices regarding occupational health hazards, health promoting lifestyle and first aid.

Specific objectives: By the end of health promoting lifestyle program the railway train drivers can be able to:

-Recognize basic rules of health promoting lifestyle program.
-Define occupational health hazards.
-Enumerate types, causes of occupational health hazards.
-Mention causes of train accidents.
-Discuss effects of occupational health hazards.
-Explain ways of preventing occupational health hazards.
-Define first aids.
-Mention purposes and principles of first aid.
-List components of first aid kit.
-Clarify qualities of first aider.
-Describe personal safety during provision of first aid.
-Define CPR and condition requiring CPR.
-Define health-promoting-lifestyle.
-List health-promoting-lifestyle domains.
-Clarify benefits of practicing healthy life-style behaviors.
-Mention problems for practicing un healthy life-style behaviors.
-Define healthy nutrition, health responsibility, physical activity.
-Define spiritual growth, personal relationships, stress management.
-Apply CPR and apply first aid for burn, shock, wound and bleeding, fractures.

Content of program was designed to meet the train drivers' needs and to fit into their interest and level of understanding. Its contents were:

-Meaning, types, causes of occupational health hazards.
- Causes of train accidents, effects and ways of preventing occupational health hazards.
-Meaning, purposes and principles of first aid.
- Components of first aid kit and qualities of first aider.
- Personal safety during provision of first aid.
-Meaning and condition requiring CPR.
-Meaning and health-promoting-lifestyle domains.
-Benefits of practicing healthy life-style behaviors and problems for practicing un healthy life-style behaviors.
-Meaning of healthy nutrition, health responsibility, physical activity, spiritual growth, personal relationships and stress management.
-CPR performance and first aid for burn, shock, fractures, wound and bleeding.

(III) Implementation phase: The program was implemented for all train drivers at suitable time, to ensure that they were exposed to the same learning experience, they received the same program content, used same teaching strategies. The data was collected from train drivers who attended in the previously selected mentioned setting through the interview with them. The study was carried out over a period of one year from the beginning of October 2023 to the end of October 2024; The researchers visited the Wardan Training Institute one day every week (Saturdays). from 10:00 am to 1:00 p.m. and from 9.00 a.m. to 12:00 p.m. to collect the data and cover the studied sample. Every month a group of train drivers attended at the previously mentioned setting to take training courses. The number of this group 50 train drivers which change every month and another group attending.

The data was collected from train drivers after taking their acceptance to participate in the study, used simple Arabic language to suit the understanding level of the train drivers. The researchers explained the aim of the study

for the participate train drivers with assuring that the participation in the study was a choice, there won't be any harm and the participant train drivers was able to withdraw at any time. The researchers collected the data through nine sessions (6 theoretical and 3 practical); the number of interviewed train drivers was 25 train drivers per week. The researchers provided 2-3 sessions to the group in each weekly visited for a month. Each session took about 30 to 40 minutes.

The researchers provided theoretical sessions through lectures, followed by discussion. Handouts, pictures and discussion were used during the lecture to enhance acquisition of knowledge and to attract train drivers attention. During practical sessions, demonstration were used to help train drivers to acquire basic simple skills for first aid and re-demonstration was used to ensure skill acquisition by the studied train drivers. In the first session, the researchers introduced themselves to participants and explain the aim of the study. Each session started by a summary about what was given during the previous session and the objectives of the new topics and ended by a summary of essential items discussed and performed. Finally the post test was done to evaluate the gained knowledge and practices after the program. Also, they were informed about the time of next session. The researchers used group discussion, motivation and reinforcement also booklet utilized to improve learning, with clearance of general and specific objectives.

Methods of teaching:

•Lectures / discussion.
•Demonstration and re-demonstration.
•Brain storming
•Role play

Media used:

•Handout & colored posters.
•Brochures & Videos

(IV) Evaluation phase: Evaluation of the program was made by using the posttest questionnaire which has the same formats of pretest in order to compare the change in drivers' knowledge, practices and lifestyle pattern. It was done immediately after implementation of the program.

Statistical design:

The collected data were organized, tabulated and analyzed using appropriate statistical test. The data were analyzed by using the Statistical Package for Social Science (SPSS), version (20), that was used to calculate frequencies and percentages mean and standard deviation, also statistical significance and associations by using Chi-Square test, and spearman correlation test (r).

Significance levels were considered as follows:

•Highly significant (HS)	P < 0.001**
•Significant (S)	P < 0.05*
•Non-significant (NS)	P > 0.05

Results:

Table (1): Shows that; 52.7% of studied railway train drivers their age ranged between 45<50 with mean ±SD = 47.52±5.11 and 97% of them had intermediate education. Regarding occupation 98.7% of studied railway drivers were governmental occupation, 97% of them were married and 57.0% of them were from rural area. Also, 89.7% of them didn't have enough monthly income.

Table (2): Shows that; 48% of the studied railway train drivers had physical illness of hypertension and 51.7% had diabetes mellitus. Regarding psychological disorders, 50% of them suffer from anxiety and 46.7% suffer from tension.

Figure (1): Illustrates that; 59% of studied railway train drivers had poor total knowledge about occupational health hazards pre- program decreased to 2% post-program. While 4% of them had good total knowledge pre- program that improved to 50% post- program.

Furthermore, 36.7 % of them had average total knowledge pre-program improved to 48% post-program.

Figure (2): Illustrates that; 65.6% of studied railway train drivers had poor total knowledge about first-aid pre- program decreased to 4% post -program. While 7.7% of them had good total knowledge pre- program that improved to 68.3% post -program.

Figure (3): Illustrates that; 66% of studied railway train drivers had poor total knowledge about health promoting life style pre- program decreased to 5.7% post- program. While 8 % of them had good total knowledge pre- program that improved to 68.6% post- program.

Figure (4): Illustrates that, 61.7 % of studied railway train drivers had poor level of total knowledge pre- program decreased to 5.7 % post -program. While 7.0 % of them had good level of total knowledge pre- program that improved to 66.0% post- program.

Figure (5): Illustrates that; 29% of studied railway train drivers had healthy total lifestyle pattern pre- program that improved to 74.7% post-program. While 71% of them had unhealthy total lifestyle pattern pre- program that decreased to 25.3% post -program.

Figure (6): Illustrates that; 24.3% of studied railway train drivers had satisfactory total first aid practices pre- program implementation that improved to 85.7% post- program implementation. While 75.7% of them had unsatisfactory total first aid practices pre-program decreased to 14.3 % post- program.

Table (3): Shows that; there were statistically significant positive correlations between railway drivers' total knowledge, total health promoting lifestyle and total first-aid practices pre -program ($p < 0.05$), while there were highly statistically significant positive correlations between railway train drivers' total knowledge, total health promoting lifestyle and total first-aid practices post program at ($p<0.001$**).

Table (1): Distribution of railway train drivers regarding socio-demographic characteristics (n=300).

Socio-demographic characteristics	No	%
Age		
40<45	23	7.7
45<50	158	**52.7**
≥ 50	119	39.7
Mean ±SD	**47.52±5.11**	
Educational level		
Basic education	4	1.3
Intermediate education	291	**97.0**
University education	5	1.7
Occupation		
Governmental	296	**98.7**
Contract	4	1.3
Marital status		
Married	291	**97.0**
Divorced	5	1.7
Widowed	4	1.3
Place of residence		
Rural	171	**57.0**
Urban	129	43.0
Monthly income		
Enough	31	10.3
Not enough	269	**89.7**

Table (2): Distribution of studied railway train drivers regarding their medical history (n=300).

Medical history	No	%
Physical illness		
Hypertension	144	**48.0**
Cardiovascular problems	70	23.3
Diabetes Mellitus	155	**51.7**
Respiratory diseases	54	18.0
Kidney and urinary system problems	4	1.3
Liver and gallbladder problems	2	0.7
Musculoskeletal problems	2	0.7
No problems	6	2.0
Psychological disorders		
Anxiety	150	**50.0**
Tension	140	**46.7**
Nervousness	75	25.0
Lack of concentration	94	31.3
Depression	67	22.3
Psychological stress	37	12.3
Personality disorders	22	7.3
Post-traumatic stress disorders	12	4.0
Obsessive-compulsive disorders	3	1.0

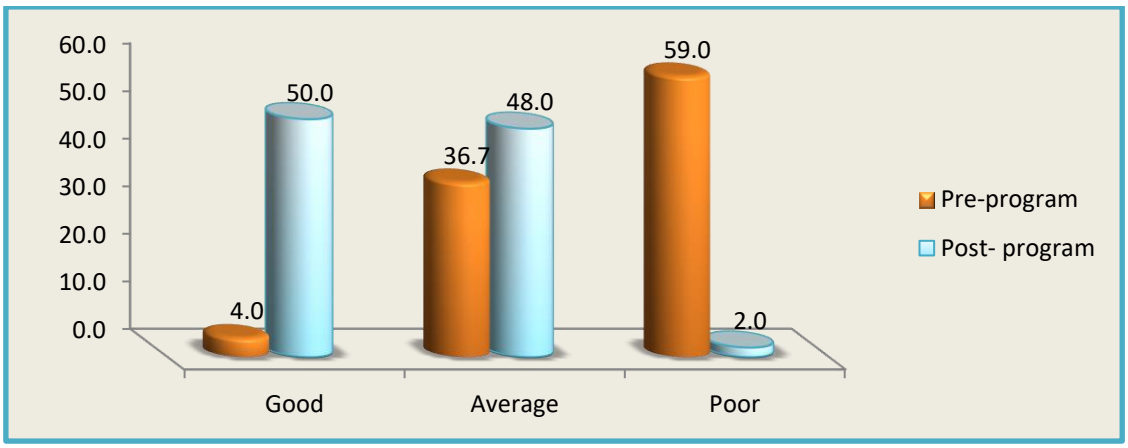

Figure (1): Percentage distribution of studied railway train drivers regarding their total knowledge about occupational health hazards pre and post program (n=300).

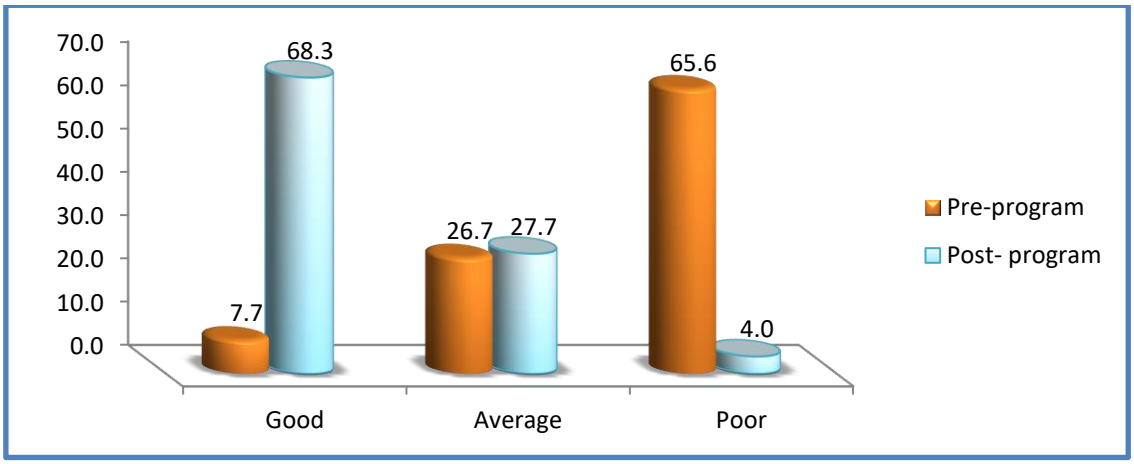

Figure (2): Percentage distribution of studied railway train drivers regarding their total knowledge about first aid pre and post program (n=300).

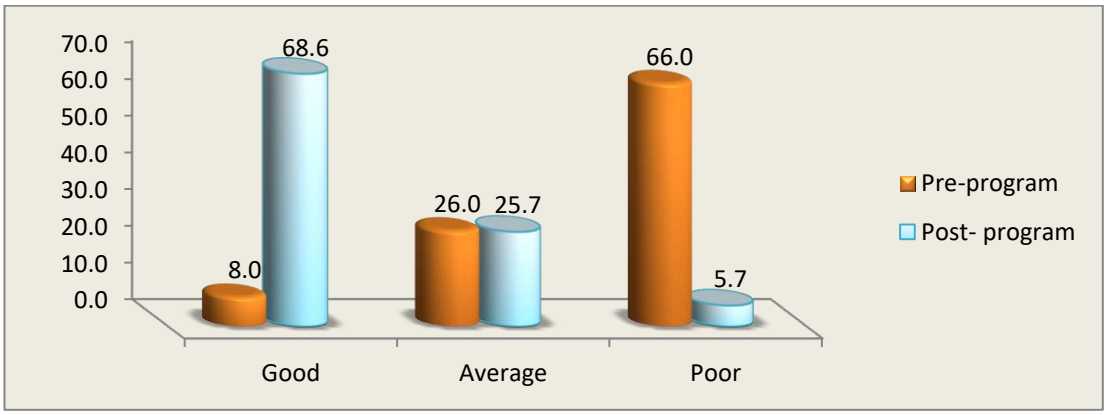

Figure (3): Percentage distribution of studied railway train drivers regarding their total knowledge about health promoting lifestyle pre and post program (n=300).

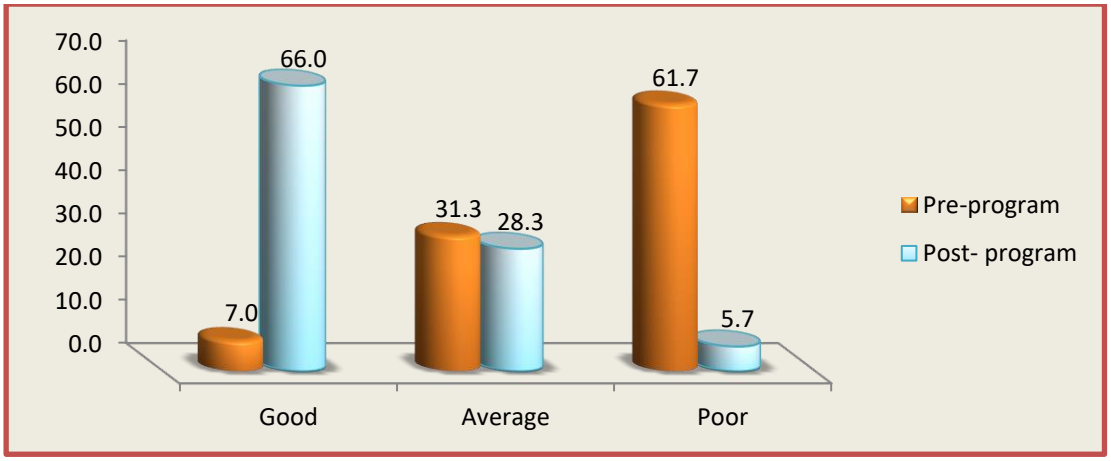

Figure (4): Percentage distribution of studied railway train drivers regarding their total knowledge level pre and post program (n=300).

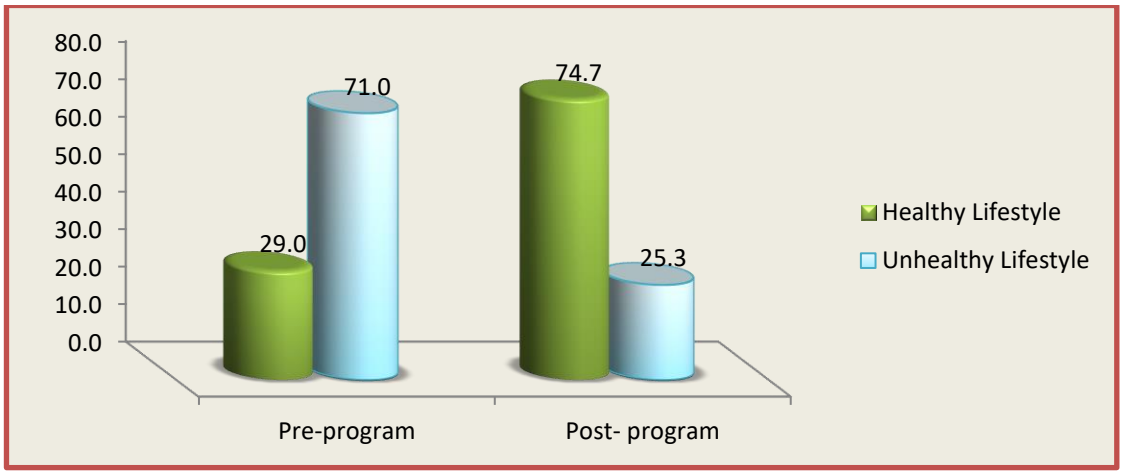

Figure (5): Percentage distribution of studied railway train drivers regarding their total lifestyle patterns pre and post program (n=300).

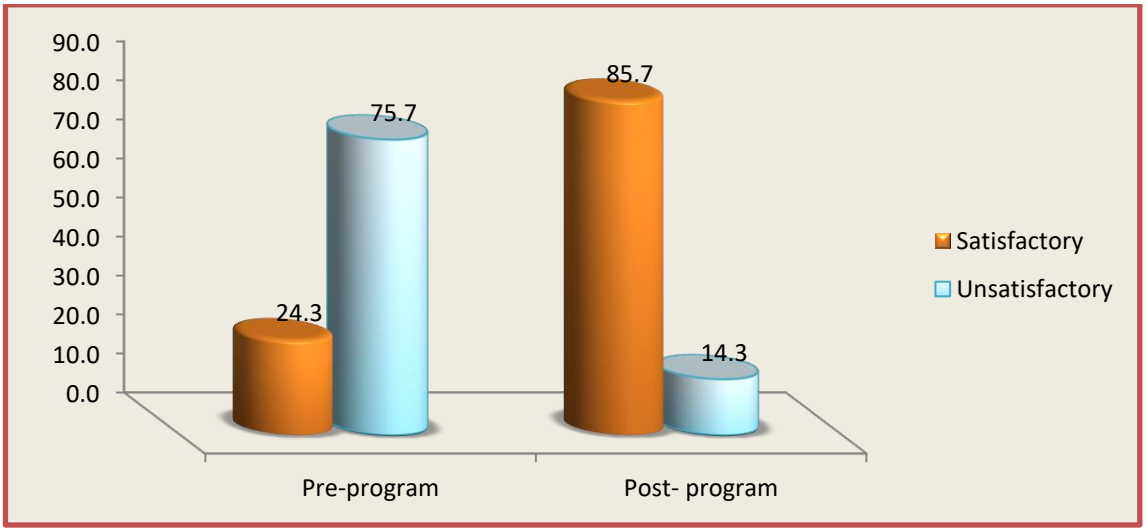

Figure (6): Percentage distribution of studied railway train drivers regarding their total first aid practices pre and post program (n=300).

Table (3): Correlation between total knowledge, total health promoting lifestyle and total practices among studied railway train drivers pre and post program (n=300).

Total knowledge, total health promoting life style and total first aid practices		Total knowledge		Total health promoting lifestyle		Total first aid practices	
		r	p-value	r	p-value	r	p-value
Pre- program	Total knowledge	-	-	.412	.012*	.287	.043*
	Total health promoting lifestyle					.335	.044*
Post- program	Total knowledge	-	-	.904	.000**	.815	.000**
	Total health promoting lifestyle					.847	.000**

Discussion:

A lifestyle is a way of living that could be considered either healthy or un healthy depending on personal behavioral choices. Health promoting lifestyle derived from social learning theory, attempts to explain individuals' participation in health-promoting behaviors and posits that cognitive–perceptual factors influence health-promoting behavior. Modifying factors also may operate through the cognitive–perceptual factors in affecting behavior. The cognitive–perceptual factors consist of importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, and perceived benefits of and perceived barriers to health-promoting behaviors. With the exception of the perceived barriers to health promoting behaviors, all of these factors are expected to be positively related to the behavior. Modifying factors include demographic and biologic characteristics, interpersonal influences, and situational and behavioral factors **(Chen et al., 2021).**

The implementation of health-promoting lifestyle interventions for railway train drivers is imperative for the mitigation of occupational health risks, particularly in light of the physically and psychologically demanding characteristics of their profession. Train operators encounter a multitude of occupational hazards, including extended periods of inactivity, inconsistent sleep cycles, and elevated stress levels, all of which may precipitate significant health complications, such as cardiovascular conditions, musculoskeletal ailments, and psychological disorders **(Bahari, 2021).**

According to socio-demographic characteristics of studied railway train drivers, the findings of the present study clarified that, more than half of studied railway train drivers their age ranged between 45<50 with mean ±SD = 47.52±5.11, most of them had intermediate education and most of them were governmental occupation. Concerning to marital status and residence of studied railway train drivers the results of this study revealed that more than half of train drivers were from rural area, and most of them were married. As

regard to monthly income of studied railway train drivers majority of them had not enough income.

Concerning medical history of studied railway train drivers, the current study demonstrated that; less than half of the studied railway train drivers had physical illness of hypertension and more than half had diabetes mellitus. Regarding psychological disorders, half of drivers suffer from anxiety and less than half suffer from tension. This result was strongly agreed with **Awaad et al., (2023)** who studied "Cardiovascular risk factors among train drivers, Mansoura, Egypt" (n= 100) and revealed that less than half of train drivers were hypertensive, about two thirds of drivers had obesity, and more than two thirds had mild and/or moderate level of psychological distress.

Also, this result was corroborated with **Rashmi & Marisamynathan, (2024)** who studied "An investigation of relationships between aberrant driving behavior and crash risk among long-haul truck drivers traveling across India: A Structural Equation Modeling approach" in India (n= 756) and reported that more than half of the participants were Suffering from any diseases Diabetes and hypertension respectively. On the other hand, this result was contraindicated with **Dorrian et al., (2022)** who reported that the three quarters of the participants were hypertensive, and the minority were diabetic. From the researchers point of view, the high prevalence of hypertension and diabetes among railway train drivers is likely due to their sedentary work, involving long hours of sitting with little physical activity. Irregular and stressful working hours, including night shifts, can also disrupt their routines and lead to unhealthy eating habits, increasing the risk of these conditions.

Regarding total knowledge about occupational health hazards of studied railway train drivers, the present study illustrated that; more than half of studied railway train drivers had poor total knowledge about occupational health hazards pre- program decreased to the minority post-program. While minority of them had good total knowledge pre- program that improved to half post- program. Furthermore, more than one third of them had average total knowledge pre-program improved to less than half post- program.

These findings were coinciding with **Zhou & Lei, (2020)** who studied "A slim Integrated with Empirical Study and Network Analysis for Human Error Assessment in the Railway Driving Process" in china (n=13) and indicated that more than half of the drivers had poor total knowledge about occupational health risks. Also, these findings were corroborated with **Finochenko et al., (2021)** who conducted a study of "Risk Management in Transportation Safety System" in Russia (n= 336,000) and demonstrated that about two thirds of the participants had poor knowledge regarding occupational health risks.

Regarding total knowledge of studied railway train drivers about first aid pre and post- program, the current study illustrates that; more than two thirds of studied railway train drivers had poor total knowledge about first-aid pre- program decreased to minority post- program. While minority of them had good total knowledge pre- program that improved to more than two thirds post program. These findings were in agreement with **Cullu (2021)**, who studied "A survey on Drivers' First Aid Knowledge and Experience in Aydin Region, Turky" (n= 138). Who reported that drivers' first aid was inadequate.

Also, the previous findings were in the same line with **Bayraktar et al., (2020)**, who studied "Evaluating the Effectiveness of a First Aid Training Course on Drivers in

Ankara" (n=350) and found that the knowledge level of the drivers was increased significantly after the training as the mean knowledge level of the drivers on first aid was 41.87±13.9 in pre-test, and 69.05±14.2 in post-test. The difference between pre and post-test score was found statistically significant ($p \leq 0.05$). From the researchers' point of view, the initial low level of knowledge (more than two thirds had poor knowledge) indicates that there was considerable room for improvement. The stark contrast in knowledge levels pre- and post-program suggests that the drivers were highly receptive to the training, possibly due to their recognition of the importance of first aid in their daily work and the risks they face. This intrinsic motivation could have driven them to engage more fully with the educational content.

Concerning total knowledge about health promoting lifestyle pre and post program of studied railway train drivers, the current study illustrated that; more than two thirds of studied railway train drivers had poor total knowledge about health promoting lifestyle pre-program decreased to minority post educational program. While minority of them had good total knowledge pre- program that improved to more than two thirds post-program. These findings were consistent with **Rashmi & Marisamynathan, (2024)** who clarified that more than half of the participants had good health-related lifestyle characteristics.

Concerning total knowledge level pre and post program of studied railway train drivers, the current study showed that; more than two thirds of studied railway train drivers had poor level of total knowledge pre- program decreased to the minority post- program. While minority of them had good level of total knowledge pre- program that improved to more than two thirds post- program. These findings were consistent with **Madkour et al., (2020)** who conducted A study of "Car-Drivers, Knowledge and Practices regarding First Aid of Road Traffic Accidents in Sohag" (n= 87) and clarified that the majority of the drivers had knowledge and minority had good knowledge.

Concerning total lifestyle patterns pre and post-program, the present study findings illustrated that; less than one third of studied railway train drivers had healthy total lifestyle pattern pre- program that improved to more than two thirds post- program. While more than two thirds of them had unhealthy total lifestyle pattern pre-program that decreased to one quarter post-program. The previous results were in accordance with **Mahajan et al., (2019)** who conducted a study of "Effects of Driver Work-Rest Patterns, Lifestyle and Payment Incentives on Long-Haul Truck Driver Sleepiness" in India (n= 453) and stated that less than one third of the drivers had healthy total lifestyle pattern. From the researchers' point of view, there could have been concurrent improvements in the environment or working conditions that support healthier lifestyles. For instance, if the program was part of a broader initiative that also improved facilities, such as better access to healthy food options or exercise facilities, this could have contributed to the positive outcomes.

Concerning total first aid practices pre and post program of studied railway train drivers, the present study illustrates that; less than one quarter of studied railway train drivers had satisfactory total first aid practices pre-program implementation that improved to the majority post program implementation. While more than three quarter of them had unsatisfactory total first aid practices pre-

program decreased to the minority post program.

These results were consistent with **Vakili et al., (2021)**, who performed a study of "The Efficacy of A first aid Training Course for Drivers: an experience from Northern Iran" in Iran (n= 320) and reported that drivers showed a marked increase in satisfactory first aid practices from 0% pre-program to more than two thirds post-program. In researchers opinion, the program may have raised awareness about the importance of first aid, motivating drivers to apply what they learned. Understanding the critical role of first aid in emergency situations can improve adherence to proper practices. Also, these findings were supported with **Olumide et al., (2020)**, who studied "Effect of First Aid Education on First Aid Knowledge and Skills of Commercial Drivers in South West Nigeria" (n=400) and reported that first aid score for intervention drivers were less than fifth pre intervention and improved to majority post intervention.

Concerning correlation between total knowledge, total health promoting lifestyle and total practices among studied railway train drivers pre and post program, the current study revealed that; there were statistically significant positive correlations between railway train drivers' total knowledge, total health promoting lifestyle and total first-aid practices pre - program ($p < 0.05$), while there were highly statistically significant positive correlations between railway train drivers' total knowledge, total health promoting lifestyle and total first-aid practices post program at ($p<0.001$**).

These results agreed with **Li et al., (2024)** who indicated that there was statistically significant positive correlation between railway train drivers' total knowledge, total health promoting lifestyle. Also, this result was similar to **Abd El-rahman, (2019)** who revealed that there was a highly statistically significant positive correlation between drivers' total knowledge score and total practices score post program implementation, ($P< 0.001$). From the researchers' perspective, increased knowledge from the program may have resulted in tangible changes in behavior. As drivers gained skills into health promotion and first-aid, they might have become more aware of their health and more diligent in applying first-aid, leading to improved health outcomes.

Conclusion:

The health promoting lifestyle program succeeded to improve knowledge, practices of first aid and lifestyle pattern of studied railway train drivers. Confirmation of this, minority of studied railway train drivers had good total level of knowledge pre- program that improved to two thirds post- program, while less than one third of studied railway train drivers had healthy total lifestyle pattern pre- program that improved to more than two thirds post- program. Additionally, less than one quarter of studied railway train drivers had satisfactory total first aid practices pre-program implementation that improved to majority post program implementation.

Finally, the study concluded that, there were statistically significant positive correlations between railway train drivers' total knowledge, total health promoting lifestyle and total first-aid practices pre-program, while there were highly statistically significant positive correlations between railway train drivers' total knowledge, total health promoting lifestyle and total first-aid practices post program. In the light of the above mentioned findings, the study hypotheses were supported and approved with the aim of the present study.

Recommendations:

1) Continues health promoting lifestyle program for railway train drivers regarding

first aids and prevention of occupational health hazards.

2) Distributed a simplified and comprehensive booklet for all railway train drivers which include a clear, brief and simple explanation about occupational health hazards, first aid and risks of unhealthy lifestyle pattern.

3) Periodic checkup of physical and psychological health status for railway train drivers.

4) Health education program for newly train drivers before starting driving regarding types of occupational health hazards, safety measures, emergency plan and crises management.

Recommendation for further studies:

Replication of the study on large sample size in different setting for railway train drivers to generalize the results.

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برنامج تعزيز نمط الحياة الصحي بين سائقي قطارات السكك الحديدية للوقاية من مخاطر الصحة المهنية

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يواجه سائقي قطارات السكك الحديدية مخاطر متعددة مثل السرطان والحوادث، أمراض العضلات والعظام، أمراض الجهاز التنفسي، أمراض السمع، أمراض الدورة الدموية، الاضطرابات المرتبطة بالإجهاد وغيرها. يمكن لبرنامج نمط الحياة المعزز للصحة أن يلعب دورًا محوريًا في التخفيف من مخاطر الصحة المهنية وضمان رفاهية وسلامة سائقي قطارات السكك الحديدية. لذلك هدفت هذه الدراسة الى تقييم تأثير برنامج نمط الحياة المعزز للصحة بين سائقي قطارات السكك الحديدية للوقاية من مخاطر الصحة المهنية. وقد أجريت هذه الدراسة بمعهد وردان لتدريب سائقي القطارات التابع للهيئة القومية لسكك حديد مصر. يقع المعهد في محافظة الجيزة بمدينة وردان على بعد ٥٠ كم شمال غرب القاهرة على ٣٠٠ سائق قطار تم اختيارهم بشكل عشوائي من بين ٦٠٠ سائق قطار في العام، حيث اسفرت نتائج الدراسة أن اكثر من نصف السائقين يتراوح اعمارهم بين ٤٥ <٥٠. حوالى نصف سائقي القطارات الخاضعين للدراسة يعانون من ارتفاع ضغط الدم. أقلية من سائقي قطارات السكك الحديدية كان لديه مستوى جيد من المعرفة قبل تنفيذ البرنامج والذي تحسن الي ثلثي منهم بعد البرنامج، أقل من ثلث سائقي قطارات السكك الحديدية الخاضعين للدراسة كان لديهم نمط حياة صحي قبل تنفيذ البرنامج والذي تحسن الى أكثر من الثلثين بعد البرنامج, أقل من ربع سائقي قطارات السكك الحديدية الخاضعين للدراسة كان لديه ممارسات مرضية تجاه الإسعافات الأولية قبل تنفيذ البرنامج والذي تحسن الى الأغلبية بعد تنفيذ البرنامج. هناك علاقة ايجابية ذات دلالة احصائية عالية بين المعرفة الكلية، وإجمالي نمط الحياة المعزز للصحة، والممارسات الكلية تجاه الإسعافات الأولية بعد تنفيذ البرنامج. كما اوضحت الدراسة بان هناك حاجة الى تكرار الدراسة على عينة كبيرة الحجم في بيئات مختلفة لسائقي قطارات السكك الحديدية لتعميم النتائج.