" NUTRITIONAL AND HEALTH ASSESSMENT AND MANAGEMENT OF LIFESTYLE FACTORS OF TAXI DRIVERS IN KANPUR CITY "

कानपुर शहर में टैक्सी चालकों के पोषण और स्वास्थ्य मूल्यांकन और जीवनशैली कारकों का प्रबंधन

THESIS

SUBMITTED IN

PARTIAL FULFILMENT OF THE REQURIEMENTS

FOR THE DEGREE

OF

MASTER OF SCIENCE IN COMMUNITY SCIENCE

IN

FOOD SCIENCE AND NUTRITION

2024

Submitted by:

Archna Yadav

Id. No. CH-2131/2022

Under the guidance of:

Dr. Vinita Singh

Associate Professor

DEPARTMENT OF FOOD SCIENCE AND NUTRITION

CHANDRA SHEKHAR AZAD UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, KANPUR - 208002 (U.P.) INDIA

Dr. Vinita Singh
Associate Professor

Department of Food Science and Nutrition
Chandra Shekhar Azad University of Agriculture and Technology, Kanpur- 208002 (U.P.)

Certificate

This is to certify that **Miss. Archna Yadav, Id. No. CH-2131/2022,** a candidate for the degree of **Master of Science** in **Community Science**, with the major in **Food Science and Nutrition** , Chandra Shekhar Azad University of Agriculture and Technology, Kanpur (U.P.), India, has been working under my guidance and supervision during the session 2022-2024 and the present thesis entitled "**Nutritional and health assessment and management of lifestyle factors of taxi drivers in Kanpur City",** which she has submitted in partial fulfillment for the award of said degree is her genuine and original work and is the record of bonafide research work carried out by her.

Major Advisor
Dr. Vinita Singh
Associate Professor

Date:

Place: Kanpur

Chandra Shekhar Azad University of Agriculture and Technology,

Kanpur-208002 (U.P.)

Certificate

We, the undersigned members of the advisory committee of **Miss. Archna Yadav, Id. No. CH-2131/2022** a candidate for the degree of **Master of Science** in **Community Science**, with the major in **Food Science and Nutrition**, agree that the thesis entitled, **"Nutritional and health assessment and management of lifestyle factors of taxi drivers in Kanpur City",** may be submitted by her in partial fulfillment of the requirement for said degree.

(Dr. Vinita Singh)
Chairman
Associate professor
Department of Food Science and Nutrition

(Dr. Seema Sonkar)
(Member)
Associate Professor
Department of Food Science and Nutrition

(Dr. Rashmi Singh)
(Member)
Associate Professor
Department of Food Science and Nutrition

(Dr. P. K. Upadhyay)
(Member)
Professor
Department of Animal Husbandry and Dairying

Dedicated

To My

Father

ACKNOWLEDGEMENT

First and foremost, I offer my obeisance to the 'Almighty' for his boundless blessing, which accompanied me in all the endeavours.

I am pleased to place my profound etiquette to my advisor ***Dr. Vinita Singh,*** *Associate Professor (Department of Food Science and Nutrition), College of Community Science, Chandra Shekhar Azad University of Agriculture & Technology, Kanpur, U.P. for her inspired guidance, her learned counsel, unstinted attention, magnanimous attitude right from the first day, arduous and meticulous guidance on the work in all stages. Her keen interest, patient hearing munificent acquiescence and meticulous reasoning to refine this thesis and most explicitly to reckon with set standards. Ineffable in my gratitude and sincere thanks to for her transcendent suggestions and constructive criticism have installed in me the spirit of confidence and efforts to embellish the study.*

I deem it my privilege in expressing my fidelity to members of my advisory committee, ***Dr. Seema Sonkar and Dr. Rashmi Singh*** *Associate professor, Department of Food Science and Nutrition, College of Community Science, Chandra Shekhar Azad University of Agriculture and technology,* ***Dr. P.K. Upadhyay****, Professor, Department of Animal Husbandry and Dairying, College of Agriculture, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, for their constructive suggestions, valuable guidance, Untiring Interest, Cooperation, well timed suggestions during the course of investigation and all staff members in the department for their help.*

No words are enough to express my whole hearted and affectionate gratitude to my beloved parents ***Sri. Den Narayan Yadav*** *and* ***Smt. Manju Yadav****, my brother* ***Alekh Yadav*** *and sister* ***Archita Yadav*** *for their unbounding love, unparallel affection and unstinted encouragement throughout my educational career and without whose invaluable moral support, the thesis*

would not have seen the light of the day. Your belief in my abilities has been a constant source of strength.

A special note of appreciation goes to my special senior and friend ***Mr. Abhay Singh*** *who have stood by me throughout this journey. Your support, understanding, and encouragement, especially during the challenging times, have meant the world to me.*

I am grateful for the funding that allowed me to focus on my research and explore new ideas. Additionally, I would like to thank ***Chandra Shekhar Azad University of Agriculture and Technology, Kanpur*** *for providing access to essential resources and facilities*

A word of thanks not come in between us but still from the depth of my heart I convey my devoted thanks to my friends ***Princi prasad, Usha, Bhawana Murari, Siddhant Parashar, Anuradha, Dipali Goand*** *for their co-operation, all time help and constant encouragement during my research period.*

I express my heartfelt gratitude and thanks to my Seniors ***Vanshika Tiwari, Komal Shukla, Vaishali Singh, Richa Singh, Nidhi Singh, and Anjali Yadav*** *for their unselfish help in every step in the course of my trail.*

Finally, I wish my humble thanks to one and all who have directly or indirectly contributed to the conduct of the study.

Place: Kanpur

Date:

(Archna Yadav)

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER-I

INTRODUCTION

Taxi drivers play a crucial role in urban transportation systems, providing on-demand transportation services to passengers in cities worldwide. Taxi drivers are front-line employeesin the transportation sector who must navigate through intricate urban environments, adjust toshifting traffic patterns, and guarantee the timely and safe delivery of passengers to their destinations. They are able to provide clients with prompt and practical transit options becauseof their familiarity of the area's streets, traffic patterns, and detours. Managing various kinds of passengers is one of the main difficulties faced by taxi drivers. While some people are friendly and polite, others might be strict or challenging. Even in difficult situations, taxi drivers must exercise patience and courtesy. They must be capable of handling any issues that may come upthroughout the ride and have strong communication skills.

According to Smith and Johnson (2019), Taxi drivers frequently experience difficult workingconditions, such as lengthy hours behind the wheel, exposure to traffic-related stressors, and unpredictable earning patterns. Despite these limitations, many taxi drivers take pleasure in their employment and aim to provide excellent service to their customers. They gain interpersonal skills to interact with passengers from all backgrounds while maintaining a professional manner during their shifts.

Furthermore, as noted by **Jones *et al.* (2020),** taxi drivers are increasingly using technology- driven platforms such as ride-hailing applications, which have transformed the taxi industry by allowing straightforward booking and payment choices for both drivers and passengers. Thesetechnological improvements have transformed the old taxi business model, leading to changesin driver-customer relations and service delivery systems.

Taxi drivers in India have a long history that is linked to the growth of the

country'stransportation networks and urban development. The concept of taxis in India traces back to the colonial period, when horse-drawn carriages were employed for transportation. However, the modern taxi industry began to emerge with the arrival of motor cars. Motorized taxis originally arrived in Indian cities in the early 20th century, corresponding with the global spread of vehicles **(Bhagat, 2018).**

The taxi business witnessed considerable changes after independence, with the introduction ofradio cabs and the establishment of taxi unions. In the 1980s and 1990s, radio dispatch systemswere introduced, allowing passengers to easily book cabs **(Jha, 2017).**

In India today, there are many different services offered by the taxi industry, such as ride-hailingapplications, classic black-and-yellow taxis and tourist taxis. Despite obstacles like legal concerns and competition from ride-hailing applications, taxi drivers continue to be essential in helping millions of people across access reasonably priced transportation services **(Roy, 2020).**

Nutritional assessment

"A nutritional assessment is a detailed evaluation of a patient's nutritional status, and can helpidentify if a patient has a nutritional imbalance or is likely to develop a pathological conditiondue to nutritional imbalance". Patients who have already been identified as being at nutritional risk have their nutritional status evaluated by nutritional assessment. Through nutritional assessment, medical professionals can systematically evaluate patients' overall nutritional state, diagnose malnutrition, identify underlying diseases that cause malnutrition, and develop the appropriate treatment plans. Nutritional assessment plays a crucial role in evaluating individuals' dietary intake and nutritional status **(Smith and Johnson 2020).**

It's crucial to realize that there isn't just one ideal test for determining nutritional status while doing nutritional assessments. Data should be gathered methodically, and an assessment of nutritional status should be conducted using

the total amount of information gathered. An extensive clinical examination (history and physical examination), anthropometric measurements, diagnostic testing and dietary assessments are all part of a comprehensive nutritional assessment, according to the **American Society for Parenteral and Enteral Nutrition (ASPEN) standards (Mueller, C., *et al.*,2011).**

Nutrition and health

Food and nutrition are one of the most basic and essential needs for people. In addition to beinga vital part of the system that provides healthcare, nutrition plays a significant role inmaintaining the well-being and health of individuals. Clinical outcomes are influenced by an individual's dietary status. The six categories of essential nutrients are: water, minerals,vitamins, fats, proteins, and carbohydrates.

Healthy people's nutritional needs vary depending on age, sex, and level of activity. As a result,food intake recommendations differ for every group of people. Dietary Reference Intakes (DRIs), or dietary guidelines for populations across the life cycle, are issued by the Food and dietary Board of the Institutes of Medicine (IOM) under the National Academy of Sciences in the United States.

Malnutrition results from an imbalance in the body's intake of nutrients. There is currently no universal definition for the term "malnutrition." The term "malnutrition" has historically beenused to describe a deficiency in energy intake or nutrients, which includes two main conditions: marasmus and kwashiorkor. Whereas kwashiorkor refers to a protein shortage marked by peripheral oedema, marasmus generally relates to an energy or calorie deficiency.

Clinicians can analyze and determine the cause of patients' dietary status with the help of a detailed nutritional assessment. Conditions caused by an excess or insufficient intake ofmacronutrients and micronutrients are now included under the term malnutrition. According tothe World Health Organization's guidelines, malnutrition divides into the following three categories **(Kesari A, Noel JY, 2023):**

- Undernutrition (low weight-for-height, low height-for-age, and low weight-for-age),
- Micronutrient (vitamins and minerals) deficiency or excess, and
- Overnutrition (overweight, obesity, and other diet-related health conditions such as type2 diabetes mellitus, cardiovascular disorders, etc.).

Health and nutritional status of taxi drivers

Since taxi drivers play a vital role in urban transportation networks, their health and well-beingare key components of public health. But the nature of their work exposes them to a number of health hazards, such as stress, sedentary behavior, and inadequate nutrition. It is vital to understand and handle these problems in order to enhance the general well-being and efficiencyof taxi drivers.

The nature of their jobs presents particular occupational health issues for taxi drivers. Their physical and mental health are deteriorating as a result of long hours of sitting, erratic scheduling and exposure to stressors associated to traffic **(Smith & Johnson, 2019).** Furthermore, their jobs' sedentary nature frequently results in a lack of physical activity, whichraises the risk of a number of chronic diseases **(Garcia *et al.*, 2018).**

Investigations reveal that because they have less access to healthful food options and irregulareating schedules, cab drivers are more likely to have poor nutrition. To detect nutritional deficits and create focused treatments to enhance their eating habits, a thorough nutritional assessment of this occupational group is necessary. To evaluate the nutritional status of taxi drivers, such examinations usually include dietary surveys, anthropometric measures, and biochemical analysis **(Garcia *et al.*, 2018).**

Multifaceted approaches that include access to healthcare services, lifestyle adjustments, and nutrition education are needed to address the health requirements of taxi drivers. Nutrition counselling, help with meal planning, and campaigns to improve access to nutrient-dense foodsin taxi driver rest areas are a few examples of interventions targeted at encouraging good eatinghabits **(Smith**

& Johnson, 2019). Furthermore, reducing the negative health impacts linked to sedentary behaviour and stress from the workplace can be accomplished by offering resources for stress management and encouraging physical activity through workplace wellness programs**(Jones et al., 2020).** An evaluation of the dietary and medical status of cab drivers is essential to understanding how their job affects their overall health. This occupational category may be at higher risk for health issues due to things like insufficient meal plans, sedentary behaviour, and stress from traffic congestion **(Srinivasan & Parthiban, 2019).**

Every South African individual has a fundamental constitutional right to health care. There is evidence of a quadruple burden of disease in South Africa, encompassing both communicable and non-communicable diseases as they affect the general public, including cab drivers. The majority of drivers in the taxi business are men, and as a result of their workplace, they are exposed to the harsh reality of disease burden, particularly injuries from traffic accidents. Additionally, the quarter way of pay for taxi drivers compromises lifestyle choices. The desire to collect as much wealth as they can puts them at risk for preventable unhealthy lifestyle conditions like obesity, type 2 diabetes, chronic ischemic heart disease, HIV and AIDS. Additionally, because professional drivers in the transportation sector often work sedentary jobs that encourage smoking, the consumption of stimulants like coffee, coke, and alcohol, and a lack of physical exercise, lifestyle-related diseases were the leading cause of hospitalization among them **(Ramukumba & Mathikhi, 2016).**

The stressful conditions that taxi drivers work in have an effect on their quality of life. To develop strategies for excluding health concerns within this cohort group, baseline health data on taxi drivers must be obtained. (**Ncama *et al.*, 2013)** confirmed that the taxi industry forms the backbone of the public transport industry and accounts for the bigger chunk of daily public commuting. For the sake of both themselves and their customers, it is crucial to maintain the health of taxi drivers. Driving is a demanding activity requiring continuous

perception,interpretation, decision and action **(Merat, 2019).** Thus, safety on the roads depends partly on the host driver's mental state which might be altered by optical acuity, physical fitness, or anydisorders. Safety also depends on the state of the vehicle (this includes the tyres, brakes system,seat belt, head lamps, wiper etc.) and the surroundings, i.e., weather, the roads and traffic signs,other drivers and pedestrians etc. **(WHO, 2015).**

Commercial drivers-taxi, bus, and truck drivers-provide services that are essential to the national economy of every nation, including transportation of people, agricultural products, manufactured goods, etc. Commercial drivers are under pressure to move people and goods because other modes of transportation, such as rail, water, and air, are either scarce or prohibitively expensive in a country like Nigeria. Risk factors for poor health outcomes includecardiovascular disease, risky substance use, psychological and psychiatric disorders, musculoskeletal disorders, impairments from disturbed biological cycles and other respiratory morbidities, overweight, and obesity **(Singaravel *et al.*, 2017).** In addition, unhealthy behavior's such as low food intake, tobacco use, smoking, alcohol use and physical inactivity are quite widespread among commercial drivers which tend to cluster and constitute substantialmodifiable contributions to the burden of chronic disease. Furthermore, the World Health Organization **(WHO, 2009)** discovered a connection between alcohol consumption by drivers, including dangerous usage, and traffic accidents in Nigeria. It has been discovered that drinking alcohol and smoking cigarettes, which are widespread among commercial drivers, interfere with the intake, utilization, and bioavailability of nutrients. This can lead to aberrant body massindex (BMI), basal metabolic rate changes, and changes in body weight. As a growing nation undergoing socio-economic and epidemiological changes, Nigeria also bears burden of non-communicable diseases (NCD). An estimated 57 million Nigerians have high blood pressure, many of whom go misdiagnosed.

According to (Z. Adeyanju et al., 2024), non-communicable diseases

accounted for 22% of all deaths, with cardiovascular mortality accounting for 9.2% of these cases. Commercial drivers work in environments that are conducive to the development of obesity and related non-communicable diseases (NCDs), like hypertension. These include leading a sedentary lifestyle,not having enough time to live a healthy lifestyle, eating inadequately, consuming highly refined foods high in fat and sugar (food that is high in energy), getting little exercise, having erratic sleeping patterns, having limited access to healthcare and health-seeking behavior, and being under more stress. Due to a high frequency of sedentary behavior and poor adherence to the Mediterranean diet, the population was primarily overweight or obese, with a significant incidence of abdominal obesity. Although the rates of cessation were high and the levels of nicotine dependence among current smokers were low, the majority of cab drivers had smokedat some point in their history. Given the burden of lifestyle risk factors for CVD, self-reportedhypertension and hypercholesterolemia were lower than anticipated, with a significant future risk of type 2 diabetes **(Sharif, F. *et al.*, 2016).**

The working environment for "taxi drivers" is defined by unhealthy eating habits, high stress levels from extended driving hours, exposure to different environmental dangers such air pollution, and inactivity. Since these items are readily available and affordably priced at the bus and taxi ranks where they work, their bad eating habits are made worse by their frequent ingestion of fried foods and snacks that are heavy in sugar and salt. A collection of several interrelated metabolic risk factors known as metabolic syndrome (MetS) might accelerate the onset of non-communicable diseases (NCDs) like diabetes, abdominal obesity, high blood pressure, low high density lipoprotein cholesterol (HDL-c) and high cholesterol. Two significant risk factors for Metabolic Syndrome (Metabolic syndrome) include obesity and overweight. Because its cut-off values are clearly defined and it is easy to compute, the BMI is the most widely used metric to determine obesity. Because this measure is non-invasive,

it is used in studies worldwide. Because of this, it is the greatest metric for comparing the nutritional status of various populations around the world. The BMI's limited applicability in assessing metabolic syndrome across various demographics stems from its incapacity to represent sex dimorphism, including ethnic variations in adiposity, adipose tissuedistribution, and age-related body composition **(Sekgala *et al.*, 2022).**

Lifestyle risk factors of taxi drivers

Taxi drivers in India face many health risks, including:

- **Cardiovascular disease (CVD):** Taxi drivers have higher levels of CVD-related risk factors and behavior's such as high blood pressure, overweight and obesity, smoking, diabetes, unhealthy diet, physical inactivity, and alcohol use.
- **Stress:** Long hours, lack of physical motion, back problems, traffic, fare evasion, passenger threats, and small tips can be stressful for taxi drivers.
- **Sleep issues:** Taxi drivers report sleep apnea and driving fatigue, in part due toincreased obesity rates.
- **Musculoskeletal disorders:** Taxi drivers experience physical pain, including joint painand backache.
- **Urinary disorders:** Taxi drivers may experience urinary disorders.
- **Other challenges taxi drivers face include:** Dealing with difficult customers, Navigatingthrough heavy traffic, Car maintenance and repairs, and late-night driving.

There is far more work involved in driving a cab than meets the eye. In addition to maintainingand repairing their cars, drivers also have to deal with challenging passengers, negotiate through congested areas, and keep themselves and their passengers safe. Nevertheless, becausethey are the heartbeat of the taxi industry, drivers continue to be necessary. Considering the difficulties, they face makes it possible to appreciate the priceless contribution taxi drivers make to our regular lives. Taxi driving is a line of work that is crucial to urban life, serving

millions of people globally with transportation services. However, behind the wheel lies a complex and often overlooked lifestyle that significantly impacts the well-being and livelihoods of taxi drivers. The lifestyle of taxi drivers encompasses various aspects, including their working conditions, social interactions, and personal experiences on the road.

According to (Smith, 2019), taxi drivers often work long hours, navigate unpredictable traffic patterns, and encounter diverse clientele, all of which contribute to the unique nature of their lifestyle. Taxi drivers' physical and mental health can be severely impacted by the physical andpsychological stressors they are exposed to on the job, including irregular sleep patterns and safety worries. Even though it can be difficult, becoming a cab driver can present chances for independence, adaptability, and social interaction.

According to (Brown and Miller, 2020), a lot of drivers come up with coping mechanisms to handle the pressures of the job. These include using technology for communication and navigation and building supporting networks within their communities. It's critical to comprehend the lifestyle of taxi drivers in order to guide policies and actions that aim to improve the general welfare of this vital workforce, as well as to promote occupational health and improve working conditions.

Role of technology in health management

Technology-driven solutions, such wearables and mobile health apps, may make it easier for cab drivers to maintain their health. Drivers can make educated decisions about their health and well-being with the help of these systems, which provide real-time feedback on dietary choices, levels of physical activity, and stress **(Jones *et al.*, 2020).** The effectiveness and levelof involvement of health promotion campaigns catered to taxi drivers can be increased by incorporating technology.

In this thesis, we will examine the Kanpur taxi drivers in further detail. We'll

examine the day-to-day grind and diverse aspects of the lifestyle of taxi drivers, illuminating the difficulties theyface, the coping strategies they use, and the effects on their general quality of life. We'll also examine at how the taxi sector is affected by societal issues, evolving rules, and technology. We explore the complex function that taxi drivers play in urban ecosystems. We look at the difficulties they deal with, the financial reality of their line of work, the effects of technology and the social factors that influence how they engage with customers and the larger community.Through an analysis of the experiences and viewpoints of taxi drivers, our goal is to acquire amore profound comprehension of the complex interactions that occur between people, technology, and society in the environment of urban transportation.

Objective of the study

The studies on the "**Nutritional and health assessment and management of lifestyle factorsof taxi drivers in Kanpur City"** has been undertaken with the following objectives:

1. To assess the nutritional status of taxi drivers.
2. To assess the nutrient intake of daily diet.
3. To study the food habits and dietary pattern of taxi drivers.
4. To assess the health status of taxi drivers.
5. To assess the life style and their impact on their health.

CHAPTER-II

REVIEW OF LITERATURE

Review literature, often referred to as a literature review, is a critical and comprehensive synthesis of existing research on a particular topic. This section includes analyse of studies that relevant to the current investigation objective in attempt to acquire a greater understanding of the research issue and to assist in each phase of research. The primary purpose of a literature review is to provide a thorough background for understanding the current state of knowledge on a topic. It provides an overview of the current state of knowledge, identifies gaps, and highlights key findings in the literature. One of the purposes of a literature review is also to help researchers avoid duplicating previous work and ensure that their research is informed by and builds upon the existing body of knowledge.

This literature review aims to explore existing research on **"Nutritional and health assessment and management of lifestyle factors of taxi drivers"** Taxi drivers represent a significant occupational group with unique challenges related to their health and nutritional status. The nature of their work, characterized by irregular schedules, prolonged sitting, and limited access to healthy food options, predisposes them to various health risks. Under the heading below, a thorough overview of the existing literature on different aspects of the current study has been cited:

1. To assess the nutritional status of taxi drivers.
2. To assess the nutrient intake of daily diet.
3. To study the food habits and dietary pattern of taxi drivers.
4. To assess the health status of taxi drivers.
5. To assess the life style and their impact on their health.

1. Study related to nutritional status of taxi drivers

Chen *et al*. (2015) studied amongst taxi drivers in Taipei, Taiwan, confirmed that taxi drivers had suffered from systemic inflammatory diseases. In the current findings, obesity, elevated BP, fatigue and known diabetes mellitus were reported by participants. These are health risk factors associated with CV diseases.

Martin *et al.* (2016) examined the taxi driver found that hypertension and known coronary artery diseases risks were high amongst drivers who were employed for a period of more than 4 years. The study also found that obesity, gastrointestinal diseases, fatigue, musculoskeletal system complaints, sensory complaints including haemorrhoids were higher than in general population.

Ramukumba *et al.* (2016) reported health risks faced by taxi drivers in Tshwane, revealing high rates of obesity, hypertension, and type II diabetes-related risk factors, exacerbated by unhealthy lifestyle practices. These findings emphasize the significant impact of poor health on the occupation of taxi driving, warranting immediate action to implement lifestyle modifications and establish formalized occupational health services. The study highlights the imperative for health promotion initiatives aimed at improving the overall well-being of taxi operators and ensuring the sustainability of the taxi industry in Tshwane.

Dubai *et al*. (2017) examined in a study conducted in Malaysia showed that there were high levels of low-back pain and found that taxi drivers were reluctant to disclose low blood pressure because of fear of loss of income and unemployment should they be unable to work.

Nisbett *et al.* (2017) studied the multifaceted determinants of nutritional status in high burden countries across South Asia and sub-Saharan Africa, focusing on community and household-level perspectives gathered through in-

depth interviews. It highlights the critical role of health and nutrition practices, interventions, and broader life conditions in shaping nutritional outcomes. The findings underscore a clear need for foundational improvements in livelihood opportunities and infrastructure to address undernutrition effectively. Nutrition-specific interventions, supported by governmental and non-governmental organizations, vary in implementation effectiveness but show promising impacts where well-executed. This synthesis offers valuable insights into the complexities of community-level changes within the context of broader national progress efforts. It serves as a crucial resource for understanding how local interventions interact with macro-level policies to drive improvements in nutritional health across diverse settings in South Asia and sub-Saharan Africa.

Tong & Liu (2018) studied that irregular and unpredictable nature of taxi drivers' work schedules further unpredictable their nutritional challenges, leading to erratic eating patterns and frequent meal skipping. This practice not only disrupts metabolic function but also diminishes drivers' energy levels and cognitive performance, potentially compromising their driving safety.

Lynch *et al.* (2019) studied that taxi drivers frequently encounter challenges in accessing nutritious food options while on duty, relying on fast food outlets and convenience stores for meals due to time constraints and limited access to kitchen facilities. Consequently, their diets are often characterized by high consumption of processed foods, sugar-sweetened beverages, and snacks with low nutritional value. Studies have shown that many taxi drivers skip meals or eat irregularly throughout the day, often prioritizing work over personal health.

Wang & Zhang, (2019) revealed the psychosocial stressors inherent in taxi driving, such as traffic congestion and financial instability, contribute to elevated levels of stress, anxiety, and depression among drivers. Poor mental health not only affects drivers' quality of life but also exacerbates other health conditions and impairs their ability to make healthy lifestyle choices. Limited access to nutritious

meals during work hours further exacerbates poor dietary habits among taxi drivers, increasing their risk of obesity and related comorbidities.

Alemu *et al. (*2020) examined that Cardiovascular Health Cardiovascular diseases (CVDs) are a prevalent concern among taxi drivers due to their moderate work nature and irregular schedules. Studies have indicated a higher prevalence of hypertension and other CVD risk factors among taxi drivers compared to the general population. The demanding nature of taxi driving often leads drivers to rely on convenient but unhealthy food options, such as fast food and snacks high in sugar and fat.

Mirpuri *et al.* (2021) suggested in the taxi driver sample, stress was a significant predictor of smoking and sleep disturbances. Overall, except for the relationship between smoking and sugar consumption, modifiable health behaviours did not generally cluster together or co-occur. However, poor nutrition and physical activity were pervasive concerns across our entire sample, and smoking rates exceeded the national rates for men of similar ethnicities. Demographic differences across stress, physical activity, and smoking were also found. And also found low rates of fruit/vegetable consumption. Rates of stress, PA, and smoking varied by demographic factors. Stress positively predicted sleep disturbances and negatively predicted smoking. Aside from a relationship between sugar consumption and smoking, other health behaviours were not associated.

Mabetwa *et al.* (2022) studied that taxi drivers in the City of Tshwane, South Africa, sheds light on the significant health risks faced by this occupational group, particularly concerning metabolic syndrome (Metabolic syndrome) and its components. With a prevalence of 17.1%, metabolic syndrome emerges as a prevalent concern, especially among older drivers and those with longer industry experience, underscoring the cumulative health impacts of taxi driving. Obesity, hypertension, and diabetes stand out as prominent individual components of metabolic syndrome among drivers, while lifestyle factors such as smoking,

alcohol use, and physical inactivity further compound these health risks. Importantly, the study identifies associations between metabolic syndrome and duration in the taxi industry, as well as family history of diabetes, highlighting the multifactorial nature of cardiometabolic risks in this population. These findings emphasize the urgent need for proactive measures aimed at early identification and intervention of cardiometabolic risks among taxi drivers, alongside efforts to promote healthier lifestyles and improve working conditions within the industry. By addressing these challenges, policymakers and stakeholders can strive towards fostering a healthier workforce and mitigating the burden of chronic diseases in the taxi driving profession.

Kesari *et al.* (2023) evaluated that nutritional status is critical, either to identify if an individual has nutritional imbalance due to an underlying condition or to assess if an individual is likely to develop a pathological condition due to nutritional imbalance. A detailed, systematic evaluation of a patient's nutritional status conducted by healthcare providers in a team-based setting to diagnose malnutrition and identify underlying pathologies to plan intervention constitutes nutritional assessment.

Rad *et al.* (2024) revealed that the factors that tire our taxi drivers are not the opposite of long working hours but alcohol consumption, living alone, and long experiences working in this job. Being a taxi driver with a high education could even make a person feel right about the quality of life, so it is better to choose the level of education appropriate to this job rather than higher. In addition, elderly taxi drivers should be given more attention and care regarding why they feel a low quality of life. If they felt better about their quality of life, they would work longer hours, be more productive, and, more importantly, experience fewer traffic accidents.

2. Study related to nutrient intake of daily diet

Balieiro *et al.* (2014) evaluated that the anthropometry and food intake patterns of bus drivers working during the day or night in a Brazilian bus company. High proportions of inappropriate feeding practices, excess weight and abdominal obesity were found among drivers of both groups, but most of the observed problems were associated more with drivers on night work than day work. Research on bus drivers revealed inadequate micronutrient intake, including Vitamin C, B1, B6, Calcium, Zinc, and Magnesium, indicating poor dietary habits and consumption patterns among drivers. Studies highlighted the prevalence of overweight and obesity among drivers due to poor diets, sedentary lifestyles, and short sleep duration, emphasizing the impact of nutritional status on health and productivity.

Appiah *et al.* (2018) examined in Assessment of Dietary Intake of Long-Distance Race Car Drivers, A Pilot Study, showed that energy, carbohydrate, vitamin B_2, vitamin E, vitamin D, folate and fiber intake did not meet the recommendation for athletes and the DGE. Protein intake was within the recommended levels for athletes but exceeded that of the DGE. Fat and calcium intake were below and above the dietary recommendation for athletes and DGE respectively. Vitamin B_1, vitamin B_6, vitamin B_{12}, vitamin C, sodium, magnesium, iron, zinc and water intake were above the recommended dietary intake for the DGE (German Nutrition Society). Adequate energy intake is essential for optimal performance in sport.

Adepoju *et al.* (2019) revealed in Association of Paraga Consumption and Dietary Lifestyle on Nutritional Status of Commercial Drivers in Ibadan Municipality of Oyo State, Nigeria. The energy (61.8%), fat (92.2%), carbohydrate (67.1%), vitamins A (70.6%), C (92.4%), B6 (53.8%), and calcium (91.0%) intakes of most of the respondents were inadequate when compared with the recommended daily allowance (RDA). However, 35.3% and 46.7% of the respondents had adequate intake of energy and protein, while 37.9%, 44.1%,

39.1% and 80.8% had excess intake of vitamins B1, B2, B3, and iron respectively when compared with the RDA of each micronutrient.

Okorie *et al.* (2020) revealed the significant associations between PCF and lack of regular physical activity, self-reported snoring/sleep apnea, tobacco use, and alcohol use. These relationships are approximately 50% stronger per each 10% increase in fat calories, with the most pronounced associations found in those truck drivers whose diets contained the highest PCF (38.2%-51%). Commercial drivers have significant associations between PCF (percent calorie from fat) and lack of regular physical activity, sleep apnea, tobacco use, and alcohol use. These relationships are about 50% higher per 10% increase in fat calories. These data identify drivers at increased risk for these poor health measures. Interventions targeting reductions in fat calories seem likely to improve driver health, although longitudinal studies are required to prove this hypothesis.

Peng *et al.* (2020) examined the nutritional and health status of drivers in Batangas City, highlighting significant concerns relevant to road safety. Despite nearly 70% of drivers having normal BMI, the majority do not exercise and engage in smoking and alcohol consumption. Nutrient intake, except for iron, was found inadequate based on mean adequacy ratio (MAR) measurements. Moreover, individual diet diversity scores (DDS) indicated moderate diversity across food groups. These findings underscore pervasive health challenges among truck drivers, suggesting potential correlations between poor nutrition, health habits, and reported driving performance issues. Addressing these factors is critical for improving road safety and promoting the well-being of drivers in this occupational group.

Cuyper *et al.* (2023) revealed that the dietary nutrient profile has metabolic significance and possibly contributes to species' foraging behaviour. The brown bear (*Ursus arctos*) was used as a model species for which dietary ingredient and nutrient concentrations as well as nutrient ratios were determined annually,

seasonally and per reproductive class. Brown bears had a vertebrate- and ant-dominated diet in spring and early summer and a berry-dominated diet in fall, which translated into protein-rich and carbohydrate-rich diets, respectively. Fiber concentrations appeared constant over time and averaged at 25% of dry matter intake. Dietary ingredient proportions differed between reproductive classes; however, these differences did not translate into a difference in dietary nutrient concentrations, suggesting that bears manage to maintain similar nutrient profiles with selection of different ingredients. In terms of nutrient ratios, the dietary protein to non-protein ratio, considered optimal at around 0.2 (on metabolizable energy basis), averaged around 0.2 in this study in fall and around 0.8 in spring and summer. We introduced the minimal non-fat to fat ratio necessary for efficient maintenance metabolism. This ratio varied across seasons but never fell beneath the theoretically estimated minimum to ensure metabolic efficiency. Given the considerable proportion of fiber in the diet of brown bears, the relevance of this nutrient and its role in foraging behaviour might be underestimated.

Oyesanya *et al.* (2023) found that all (100%) of the respondents were males with a mean age of 38.7±0.49 years. The mean height and weight of the respondents were found to be 1.68±0.86 m and 68.50±8.47 kg respectively. More than half (59.7%) of the respondents had a normal BMI, 34.3% and 0.3% were overweight and obese respectively and only a few (5.7%) were underweight. The nutrient adequacy results revealed inadequacies of Vitamin C (83.3%), Vitamin B1 (66.7%), Vitamin B6 (79.3%), Calcium (89.3%), Zinc (53.3%), and Magnesium (70.7%). It is concluded that overweight, obesity, and micronutrients inadequacy is prevalent among commercial drivers. Malnutrition and micronutrient inadequacy among commercial drivers should be recognized as a public health problem and strategies to improve their status and nutrient intake should be implemented.

Papagiannaki and Kerr (2024) proposed the prevalence of overweight and obesity in children and adults has increased worldwide. A strong environmental factor contributing to the obesity epidemic is food portion size (PS). This review evaluates the current evidence linking food PS to obesity, examines the effects of PS on energy intake (EI), and discusses the drivers of food PS selection. The leading causes of the rise in PS include globalisation, intensive farming methods, the impact of World War II, due to shortage of staple foods, and the notion of 'waste not, want not'. Large PS of energy-dense foods may stimulate overconsumption, leading to high EI levels. However, the studies have not shown a cause-and-effect relationship, due to confounding factors. Important mechanisms explaining the attractiveness of larger PS leading to higher EI levels are value for money, portion distortion, labels on food packaging, and tableware. Consumers depend on external rather than internal PS cues to guide consumption, irrespective of satiety levels.

3. Study related to food habits and dietary pattern

Shrestha *et al.* (2017) revealed that the Irregular Eating Patterns The irregular work schedule of taxi drivers disrupts their eating patterns, often resulting in skipped meals or irregular timing of meals. Research has shown that irregular eating patterns can adversely affect metabolic health and contribute to weight gain and metabolic syndrome.

Simpson & Powers (2018) studied on Interventions and Recommendations Efforts to improve the health and nutrition of taxi drivers require a multifaceted approach that addresses both individual behaviors and systemic factors. Workplace interventions, such as providing access to healthy food options at taxi stands and promoting physical activity during breaks, can help mitigate the adverse effects of sedentary behavior and unhealthy dietary patterns.

Akinbode (2019) studied commercial drivers operating in motor parks in Ibadan municipality have a high prevalence rate for Paraga usage as it is usually

sold within their motor parks. Though no significant association was established between paraga consumption and nutritional status of the respondents, a significant association was observed between dietary lifestyle and nutritional status of the respondents, which might have been contributed to by the presence of alcohol in the herbal mixture. It was evident from this study that alcohol and alcoholic beverage consumption interfered with energy and nutrients intake of the respondents. Therefore, alcohol and alcoholic beverage consumption should be of public health concern as its consumption over time may predispose the consumers to the development of chronic diseases such as obesity and all its attendant health challenges later in life, as well as constituting one of the major causes of road accidents in the country. Overweight and obesity result from a caloric imbalance between calories consumed and calories expended.

McNeill *et al.* (2019) revealed that cognitive interviewing is an effective method for adapting health education materials to meet the needs of a diverse, immigrant, and low-literacy population, ensuring that the content is accessible and relevant to the target audience. Also highlighted the necessity of reducing literacy levels, avoiding complex jargon and terminology, clarifying vague phrasing, and incorporating driver-specific and ethnic-specific preferences. Visual aids were enhanced for clarity, and mathematical elements were simplified or removed.

Sanz *et al.* (2020) revealed the need for nutritional and health interventions among cycle-taxi workers to address their high rates of obesity and related health issues. The study on cycle-taxi workers reveals significant insights into their demographic, occupational, health, and lifestyle characteristics. The participants, predominantly male (91%), ranged in age from 19 to 64, with an average age of 37 years. Only 26% had completed secondary education. They worked nearly seven hours daily, six days a week, and had an average of 3.6 years of experience in cycle-taxi driving, with 41% having an additional 9.7 years of prior experience. Health issues were prevalent, with 16.2% reporting diseases such as diabetes and high blood pressure, and 73.1% suffering from musculoskeletal ailments,

particularly in the knees, buttocks, hips, and upper back. Lifestyle habits included 7.5 hours of sleep per day, a high smoking rate (50.5%), minimal drug use (3%), and insufficient physical activity beyond work (46.3%). Dietary habits were poor, with high consumption of soft drinks, sweetened bread, corn tortillas, and snacks, contributing significantly to their daily caloric intake. Fruit and vegetable intake was minimal, and protein consumption was dominated by high-fat red meat, with limited intake of chicken, fish, and eggs. The study found that 69.1% of the workers were overweight or obese, with 42.3% of men and nearly all women (90%) falling into these categories.

Lopes *et al.* (2022) examined plant-based diets (PBDs) and dietary patterns among male taxi drivers in the Cape Metropole, South Africa, focusing on their association with cardiometabolic risks. The analysis included 189 participants with a median age of 38 years. Drivers scoring higher on the healthy plant-based diet index (hPDI) showed a 1-4% lower likelihood of elevated triglycerides. Specific consumption patterns, such as refined grains and meat, were linked to reduced odds of dysglycemia, while fish/seafood, potatoes, and vegetables were associated with increased likelihoods of low high-density lipoprotein cholesterol (HDL-C) and raised low-density lipoprotein cholesterol (LDL-C). Conversely, sugar-sweetened beverages and eggs correlated with higher probabilities of hypertension and subclinical inflammation.

Adewunmi *et al.* (2023) focused on the dietary patterns, alcohol intake, and nutritional status of commercial drivers at various motor parks in Oshodi, Lagos State, highlighting the public health concerns associated with prevalent alcohol consumption among this group. The sample consisted predominantly of drivers aged 31-40 years (45%) and mostly Yoruba (67%). A significant portion (44.5%) drove luxurious buses, and a majority (61%) earned above ₦90,000 monthly. Dietary habits showed that 74.5% ate three meals daily, 27% skipped meals regularly, and 76.5% consumed snacks between meals, with snacks being the most common in-between meal choice (59%). Alarmingly, 85.5% of respondents

consumed alcohol, with 45.5% drinking frequently, and 32.5% identified as heavy drinkers. The nutritional status indicated that 14% were underweight, 44.5% had normal weight, 26% were overweight, and 15.5% were obese. Despite these patterns, there was no significant correlation between Body Mass Index (BMI) and alcohol consumption.

Bodunde *et al.* (2023) Suggested that mean age of the students was 21 ± 2 years,46% of the students at thrice per day, 36% skipped breakfast daily and 17% consumed alcohol. The main drivers of food choice among the students were sensory appeal in which taste (79%), pleasant texture (54%), and nice smell (54%) of food were considered very important. Concerning health and natural food content, the respondents considered good feeling (74%), weight control (48%), no additives (46%), low-fat content (42%), and low-calorie content (35%) as very important associated factors. Good value for money (53%), not expensive (42%), and easy availability (49%) were very important economic factors for driving food choices among respondents.

Richter *et al.* (2023) revealed significant insights into their work patterns, education, marital status, health behaviours, and stress levels. Most drivers worked day shifts (61%), with others working night shifts (22%) or varied shifts (17%). Educationally, 44% had a high school degree or some college, 43% had a college degree or higher, and 13% had less than a high school degree. A majority were married (82%). The study found low rates of fruit and vegetable consumption and physical activity (PA), with stress levels positively predicting sleep disturbances and negatively predicting smoking. Sugar consumption was associated with smoking, but other health behaviours showed no significant relationships. Demographic differences were notable for PA and smoking, indicating specific groups that might benefit from targeted interventions. Stress levels varied, with 46% experiencing low stress, 52% moderate stress, and 3% high stress.

4. Study related to health status

Zhang *et al.* (2014) revealed that 54.8% of taxi drivers reported illness in the last two weeks and 44.7% of participants reported chronic diseases. The prevalence rates of hypertension, diabetes mellitus, gastroenteritis, arthritis, and heart disease were 18.2%, 8.8%, 26%, 18.4%, and 4.8% of questioned taxi drivers, respectively. Significant self-reported symptoms included fatigue, waist and back pain, headache, dyspepsia, and dry throat affecting 49.7%, 26.2%, 23.5%, 26%, and 27% of participants, respectively. In total, 90.1% of subjects thought that it was necessary to receive a regular health examination. Only 17.9% of subjects had been given information about health education, and significantly, more than 87% of subjects who had been given information about health education reported that the information had been helpful. Taxi drivers are exposed to various risk factors such as work overload, stress, an irregular diet, and a sedentary lifestyle, which make these individuals vulnerable to many diseases.

Bawa and Srivastav (2015) studied on taxi drivers revealed that the significant socio-demographic and health-related findings. Nearly 65% were aged 21-40, with 59% belonging to the lower upper socio-economic class. A substantial 70% worked over 8 hours daily, and 63% reported one or more addictions. Personality assessments showed 52% had a type B1 personality, while only 6% had a stress-prone, aggressive type A1 personality. Traffic congestion (67.1%) was the main stressor, followed by narrow roads (43%), speed breakers (41%), rude behaviour from other drivers (42%), and bad weather (36%). Alarmingly, 86% experienced at least one morbidity, with gastrointestinal, musculoskeletal symptoms, and depression being most common. The study concludes that socio-demographic factors, work conditions, stress, and personality types significantly impact the physical and psychological health of taxi drivers.

Francis (2015) revealed a high prevalence of mental health symptoms among the drivers, with insomnia being the most prevalent issue at 59%. General psychopathology, mood disorders, and general somatic disorders were also prevalent, affecting 45.6%, 43.6%, and 39.9% of drivers respectively. The study

identified marital status and job tenure as significant factors influencing mental health outcomes. These findings underscore the urgent need for targeted interventions and support systems to address the mental health challenges faced by Lagos taxi drivers, ensuring their well-being and enhancing overall road safety.

Elshatarat (2016) reported in the United States (U.S.), cardiovascular disease (CVD) is a major leading cause of death. There is a high prevalence of cardiovascular risk factors in this group of urban taxi drivers, with higher prevalence of smoking, overweight/obesity, physical inactivity, and lower intake of fruits and vegetables, when compared to other men in San Francisco. Working conditions associated with a CVD high-risk profile includes working over 10 years as a taxi driver and a score of 5 or more on the perceived mental exertion when driving. The majority of this sample also lacked health insurance at the time of this study. Individual and group health promotion strategies include culturally tailored interventions focusing on smoking, physical activity, and weight management. Population health interventions may include offering heart healthy food options at taxi dispatching locations, and creating a work culture of frequent walking breaks and smoke-free group incentives.

Murray *et al.* (2017) explored occupational health risks and intervention opportunities for taxi drivers using community-based participatory research (CBPR) methods. It included focus group discussions with 19 East African taxi drivers and a survey of 75 drivers (mean age 45.7 years) and 25 non-drivers (mean age 40.3 years). Health education was provided alongside data collection. Drivers reported numerous health concerns related to their sedentary occupation and job stressors, such as chronic pain, sleep deprivation, cardiovascular disease, diabetes, kidney disease, and eye problems. Quantitative data showed that 44% of drivers rated their health as 'fair' or 'poor,' and they experienced more musculoskeletal pain, less sleep, more fatigue, and lower physical activity compared to non-drivers. Financial and job dissatisfaction were prevalent.

Baluja *et al.* (2018) examined taxi drivers in India's metropolitan cities highlights their crucial role in the socio-economic landscape, with significant contributions to business and tourism. The findings reveal that most drivers are married (94.01%) and live in joint families (61.31%), with a majority having over 10 years of driving experience (66.56%) and working full-time (96.72%) in shifts (92.17%) within organized sectors. Health-wise, the majority enjoy adequate sleep (94.43%), have no systemic comorbidities (95.08%), and have good vision (84.92%), with low addiction rates to alcohol (69.84%), smoking (74.75%), and chewing tobacco (85.57%). Despite three-fourths receiving formal training (77.38%) and nearly all consistently using seat belts, risky behaviors such as talking in speaker mode (73.44%), calling (87.21%), and listening to music (49.84%) are prevalent, leading to 71.80% missing road signs.

Mirpuri *et al.* (2018) examined the study compared reports of discrimination, health conditions, and health concerns among immigrant taxi drivers in New York City and Toronto. Using a convenience sample of 33 drivers from each city, the study found that all Toronto drivers had health insurance, unlike a quarter of NYC drivers. Toronto drivers experienced more every day and workplace discrimination but reported less concern about their health, potentially due to better healthcare access. Both groups reported high rates of major health conditions and a link between discrimination and chronic pain. These findings highlight the need for further research on the impact of discrimination on health among taxi drivers.

Gautam and Gnawali (2019) Studied the respiratory health problems affect the respiratory tract and lungs. WHO states that four major potentially fatal respiratory problems will account for about one in five deaths worldwide by 2030. Taxi drivers are among the major sub-population at the risk of respiratory problems because of their exposure to polluted environment. Therefore, the present study aimed to find out the respiratory health problems among the taxi drivers of Pokhara metropolitan city of Nepal. A cross-sectional study was

conducted among 203 taxi drivers of the Pokhara Metropolitan city. Multistage sampling method was used to select the desired number of taxi drivers. Percentage, mean, and standard deviation were assessed to describe, and chi square test was used to infer the findings. Ethical approval for this study was obtained from Nepal Health Research Council. All samples were male with mean age of 38.46 ± 7.8 years. Majority of the taxi drivers were educated up to secondary level (54.2%), married (91.6%), were married and 78.8 percent had income of NRs 1000-1500/day. A large proportion of the drivers (96.6%) had to work for more than 10 hours/day and three-quarters (74.4%) of them did not take rest even in weekends. Nearly a quarter (24.1%) of them complained at least one respiratory health problem or symptom. Prevalence of respiratory health problems among the taxi drivers was 24.1 percent.

Fernando *et al.* (2019) studied regarding the working conditions, health impacts, and road crash risks faced by taxi drivers. Research spanning medicine, psychology, and economics has explored these facets, often independently. This comprehensive literature review, based on a Scopus database search from 1990 to 2015 supplemented by additional sources, synthesizes existing knowledge and identifies areas for further study. It underscores the need for interventions to mitigate workload, ensure adequate breaks, and provide healthcare access. Strategies to promote healthy habits, diagnose occupational fatigue and stress, and enhance coping mechanisms are recommended to improve driver well-being.

Kasemy *et al.* (2019) examined in the study of environmental exposure to benzene as well as hematological effects of benzene exposure in taxi drivers examined taxi drivers exposed to high levels of benzene, toluene, ethyl benzene, and xylene exhibit abnormal hematological findings and a range of symptoms affecting neurological, respiratory, gastrointestinal, cardiovascular, and endocrine systems. Significant changes in blood components were also noted. Preventive measures and gas sensors are recommended to monitor and reduce these environmental exposures. Chronic diseases, particularly hypertension, were more

prevalent among drivers (17.1%) compared to controls (8.3%). Additionally, 54.3% of drivers reported waist and back pain in the past year, compared to 10% in the unexposed group. In terms of self-assessed health status, 20% of drivers reported poor health (versus 0% in the control group), and only 31.4% reported very good health (versus 70% in the control group). These findings underscore the need for targeted interventions to mitigate health risks among taxi drivers.

Rathi *et al.* (2019) revealed that all cab drivers were male and between 20 to 64 years of age. 82 (62%) drivers said they are sometimes irritated at work, 29 (21.5%) said they feel irritated daily and rest 23 (17.2%) said that they were never irritated at work. When screened for depression, anxiety and stress, it was found out that 81 (60.5%) were suffering from depression, 63 (47%) from anxiety and 49 (36.5%) had variable degree of stress. Unique characteristics of this job and demographic profile of drivers mandate highly specialised interventions. Their mental health problems should be addressed through screening, counselling and promotion of relaxation techniques like yoga.

Mirpuri *et al*. (2020) examined in taxi and for-hire vehicle (FHV) drivers in large U.S. metropolitan cities, predominantly immigrant and male, are increasingly at risk for cardiovascular conditions. A systematic review of 8800 peer-reviewed articles identified 14 relevant studies, comprising 3 mixed methods, 1 qualitative, and 10 quantitative studies, which examined 13 cardiovascular risks and conditions such as tobacco use, poor nutrition, lack of physical activity, stress, depression, BMI/waist circumference, cholesterol, diabetes, air pollution, sleep issues, hypertension, heart disease, and stroke. The review highlights a significant prevalence of poor nutrition, limited physical activity, diabetes, and high blood pressure among drivers, underscoring the urgent need for more rigorous research and policy-level interventions to improve healthcare access and design targeted workplace health initiatives.

Salsabila *et al.* (2021) found that the respiratory disease, an increasingly prevalent occupational illness, ranks among the top three causes of work-related deaths, alongside circulatory diseases and neoplasms, accounting for over 75% of these fatalities. Key risk factors for respiratory diseases include exposure to dust, allergens, and toxins. Among occupations, online motorcycle taxi drivers face heightened risks due to continuous inhalation of transportation-related pollutants and airborne toxic gases, leading to respiratory issues. Nutrition plays a crucial role in the relationship between respiratory disorders and recovery, as adequate nutritional status supports the breakdown of proteins in respiratory muscles during the catabolic process. A study involving 108 online motorcycle taxi drivers in Malang, aged 15-55 years, found that 96.3% were men, with 76.9% experiencing respiratory disorders. Furthermore, 93.6% of these individuals were underweight, indicating a significant correlation between poor nutritional status and respiratory health. Common respiratory symptoms reported included the common cold (66.7%), cough (42.6%), and phlegm production (38.9%), highlighting the need for targeted health interventions in this occupational group.

Sekgala *et al.* (2022) examined in the study, conducted as a cross-sectional analysis, utilized the International Diabetes Federation criteria to define Metabolic syndrome and employed receiver operating characteristic curves to assess the indices' predictive capabilities. Participants had a mean age of 44 years, and 45% presented with Metabolic syndrome. The findings indicated significantly higher mean values of the anthropometric indices among those with Metabolic syndrome. The highest area under the curve (AUC) results for screening Metabolic syndrome were observed for %BF and CUNBAE, followed by BMI and WHtR, with BRI showing the lowest AUC among the significant indices. These measures demonstrated excellent discriminatory power with AUCs and sensitivity values exceeding 80%. Specific cut-off points for detecting Metabolic syndrome in this population were identified: 27.5 kg/m² for BMI, 0.55 for WHtR, 25% for %BF, 4.5 for BRI, and 30 for CUNBAE. Logistic regression models revealed that

abnormal levels of BMI, WHtR, %BF, BRI, CUNBAE, triglycerides (TG), fasting blood glucose (FBG), and both systolic and diastolic blood pressure significantly increased the risk of Metabolic syndrome. This comprehensive analysis underscores the utility of these anthropometric indices in predicting Metabolic syndrome among male taxi drivers in South Africa.

Adeyanju *et al*. (2024) examined health and lifestyle characteristics of commercial vehicle drivers, who had a mean age of 43 ± 5.2 years, with 86% having completed secondary education. Key findings include poor nutritional habits, with 59% consuming soft drinks weekly and 85% eating out daily. In terms of health care, 16% use herbal medicine, and 49% purchase drugs from pharmacies as their first care option. Overweight and obesity prevalence among drivers was 20% and 33%, respectively, with significant associations between elevated BMI and factors such as age, education, physical inactivity, and alcohol consumption. Health issues reported include chest pain (15%), fever/body pain (12%), and high blood pressure (17%). While 52% engage in some physical exercise, only a small fraction do so regularly, with 36% not exercising at all.

5. Study related to lifestyle and their impact

Gany *et al.* (2015) found in The Step On It! intervention aimed to connect taxi drivers, especially South Asians, to health insurance and healthcare services. Among the 466 participants, 52% were uninsured, and 49% lacked a primary care provider. Health screenings revealed that 63% of the 384 drivers tested for blood pressure and glucose required follow-up care. Of the 77 drivers needing urgent care, 65% sought medical attention, resulting in 13 new diagnoses. For those needing regular follow-up, 41% sought care, leading to 5 new diagnoses. The intervention demonstrates the effectiveness of a scalable workplace program in improving healthcare access for a large, vulnerable group.

Martin *et al.* (2016) examined the lifestyle and medical risk factors for CVD in an Irish cohort of taxi drivers, and the first to assess adherence to

Mediterranean dietary patterns and future risk of type 2 diabetes mellitus in a cohort of taxi drivers. A high prevalence of sedentary behaviour coupled with low adherence to the Mediterranean diet was observed, resulting in a largely overweight and obese population who had high levels of abdominal obesity. Most taxi drivers had smoked at some point, although cessation rates were high and levels of nicotine dependence in current smokers were low. Self-reported hypertension and hypercholesterolaemia were lower than expected given the burden of lifestyle RFs for CVD, although future risk of type 2 diabetes was high.

Meng *et al.* (2016) revealed that 94.7% of truck drivers and 96.8% of taxi drivers reported that they had experienced fatigue while driving, and driver fatigue seemed to be more prevalent among taxi drivers. Nearly 60% of the taxi drivers reported they often or always experienced fatigue while driving, and this proportion was much higher than that of truck drivers (38%). Driver fatigue was prevalent among professional drivers, and it was even more serious for taxi drivers. Taxi drivers reported more frequent fatigue experiences and were involved in more accidents. Among the contributing factors to fatigue, prolonged driving time was the most important factor identified by both driver groups. Importantly, the reason for the engagement in prolonged driving was neither due to the lack of awareness concerning the serious outcome of fatigue driving nor because of their poor detection of fatigue. Moreover, truck drivers tended to employ methods that require stopping to counteract fatigue, whereas taxi drivers preferred methods that were simultaneous with driving.

Lynch (2019) found that taxi driving is a ubiquitous occupation in urban environments, characterized by irregular hours, sedentary behaviour, and exposure to various environmental stressors. Research suggests that taxi drivers face unique lifestyle risk factors that predispose them to a range of health issues, including cardiovascular diseases, musculoskeletal disorders, and psychological distress.

Alemu *et al.* (2020) suggested that taxi drivers are exposed to various psychosocial stressors associated with their occupation, such as traffic congestion, aggressive passengers, and financial uncertainty. These stressors contribute to elevated levels of psychological distress, including anxiety and depression, among taxi drivers. Chronic stress and mental health disorders not only compromise drivers' quality of life but also increase their susceptibility to chronic diseases and occupational injuries.

Appiah *et al.* (2020) explored the demographic and health profiles of commercial taxi drivers, highlighting significant findings on education, occupational tenure, and health conditions. Notably, 98% of the participants possessed some level of formal education, with the majority (67%) completing up to junior high school. Most drivers (51%) had a maximum of 10 years of experience in commercial driving. Health assessments revealed that while 52% had a normal BMI, 32% were overweight, and 10% were obese, with 13% being classified as obese based on waist circumference. Additionally, high blood pressure was prevalent in 63% of the drivers, dyslipidemia in 40%, and hyperglycemia in 12%. Metabolic Syndrome (Metabolic syndrome) was present in 5% of the drivers, with 50.5% and 14.7% having one or two Metabolic syndrome characteristics, respectively. The drivers' lifestyle characteristics showed high levels of fatigue (40% very tired and 30% often tired), a lack of physical exercise (72%), and sedentary leisure activities, with 60% watching television, 11% playing indoor games, and 19% sleeping when not working.

Chen *et al.* (2020) studied on one prominent lifestyle risk factor among taxi drivers is sedentary behaviour, stemming from prolonged sitting during shifts. Studies have shown that taxi drivers spend a significant portion of their workday seated behind the wheel, with limited opportunities for physical. Prolonged sitting has been linked to an increased risk of obesity, hypertension, and metabolic syndrome, contributing to the elevated prevalence of cardiovascular diseases observed in this occupational group.

Davidson *et al.* (2020) examined the high completion rate achieved in this study, combined with the diversity of participants recruited (participants born in 10 different countries speaking 14 different languages), provides strong support for the feasibility and acceptability of Driving to Health amongst its target population and completed pre- and poststudy measures (42/46, 91% completion rate). Just under half (45%) of all users used the app more than once with an average visit of 4 min 8 seconds. Responding to the user version of the Mobile App Rating Scale (uMARS), 62% (26/42) of the participants said that they would recommend the app to many people. Nearly all (40/42, 95%) participants said that driving to health increased awareness of their own mental health; 86% (36/42) said that it increased their mental health knowledge; and 76% (32/42) said that it increased their self-help behaviour.

Peng and wang (2020) explored the impact of work-related factors, fatigue, and risky behaviours on traffic accidents among taxi drivers in China across different age groups. Findings reveal distinct challenges: younger drivers face dissatisfaction with income and inadequate rest; mid-age drivers endure long working hours and high management fees; while older drivers exhibit higher rates of risky behaviours and accidents. Structural equation models confirm complex relationships, highlighting mediating processes influencing accident involvement. The study underscores the need for targeted industry regulations, incentives, and driver education programs tailored to address age-specific factors affecting driver safety and well-being in the taxi industry.

Joshi *et al.* (2021) revealed that a majority of intermediate modes of public transport (IPT) drivers are affected by psychological job stress. The stressors affecting this population remain largely unchanged since the past decade. Regular health check-ups by primary care physicians (PCP) must include an evaluation of psychological health, especially stress. By de-stigmatizing mental health issues in IPTs and encouraging healthier coping mechanisms to stress and discouraging the

unhealthier coping mechanisms, the burden of psychological stress will result in decline in its prevalence and positively impact public road safety.

Wang *et al.* (2021) revealed the irregular work schedule inherent to taxi driving is another lifestyle risk factor that impacts drivers' health and well-being. Taxi drivers often work long hours, including late nights and weekends, disrupting their circadian rhythms and compromising sleep quality. Chronic sleep disturbances not only impair cognitive function and decision-making but also increase the risk of accidents and injuries among taxi drivers.

Appiah *et al.* (2022) examined the prevalence of metabolic syndrome was low among the drivers in this study, there were high prevalence rates of its components. The lifestyle practices of the participants, if not intervened, could drive an upsurge in metabolic syndrome among them. This calls for urgent intervention strategies to address the lifestyle-related behaviours of the drivers to promote positive lifestyle change and curb the high prevalence of overweight/obesity, diabetes, high blood pressure and dyslipidemia and ultimately improve the health of the drivers and the safety of passengers.

Mabetwa *et al.* (2022) assessed the prevalence of metabolic syndrome (Metabolic syndrome) and its components among taxi drivers in Tshwane, South Africa, using a cross-sectional design with 362 participants. The drivers had a mean age of 42 ± 10.9 years. Metabolic syndrome prevalence was 17.1%, with higher rates among older drivers (24.2%) and those with longer industry experience (22.9%). Key Metabolic syndrome components identified were obesity (36%), hypertension (36%), and diabetes (46%). Lifestyle factors included smoking (30%), alcohol use (59%), and physical inactivity (71%). Metabolic syndrome was associated with longer duration in the taxi industry and a family history of diabetes. These findings highlight the need for early identification and management of cardiometabolic risks within the taxi industry to promote a healthier workforce.

Sekgala *et al.* (2023) found that the significant health risks among taxi drivers, emphasizing the prevalence and factors contributing to Metabolic Syndrome (Metabolic syndrome). The mean age of drivers was 46.6 years, and they had an average of 16.8 years of driving experience. Older drivers were significantly more likely to be diagnosed with Metabolic syndrome, with those meeting the International Diabetes Federation (IDF) criteria constituting a large proportion of the sample. Smoking, low physical activity and high spending on lifestyle items increased the risk of Metabolic syndrome. Additionally, consumption of alcohol, sugar-sweetened beverages, and unhealthy foods from street vendors was linked to higher rates of Metabolic syndrome, abnormal HDL cholesterol, triglycerides, and hypertension. Conversely, avoiding takeaway and fried foods decreased these risks. Notably, drivers who avoided fresh fruits had abnormal HDL cholesterol levels.

Vinayak *et al.* (2023) examined 31 experienced male taxi drivers in Chandigarh to understand the relationship between sleepiness and various psychological and behavioural factors. Utilizing the Epworth Sleepiness Scale and sub-scales of the Driver Stress Inventory, the study found significant positive correlations between sleepiness, hazard monitoring, and fatigue proneness, and a negative correlation with thrill-seeking. No relationship was observed between sleepiness, aggression, and dislike for driving. The socio-demographic profile revealed that most drivers had not taken a formal driving test, with red light jumping being the most common traffic violation. Smoking was a prevalent strategy to combat sleepiness. The study recommends stricter licensing procedures, stringent penalties for traffic violations, the implementation of in-vehicle fatigue monitoring systems, and ensuring sufficient sleep for commercial drivers to enhance road safety.

CHAPTER- III

MATERIALS AND METHODS

"Research Methodology refers to the systematic and scientific approach used to conduct research, investigate problems, and gather data and information for a specific purpose." Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. It involves the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. This chapter explains the procedure and material used for the study. In order to accomplish the objective the research procedure was distinctively discussed under the followings headings: -

1. Location of study
2. Sample selection and size
3. Period of study:- 2024
4. Sampling techniques:- "purposive and random sampling"
5. Tools for data collection- "Questionnaire-cum interview method"- the questions were asked in local language.

I. General information
II. Nutritional information
   a) Anthropometric assessment
   b) Clinical assessment
III. Dietary information
   a) Assessment of nutrient intake (24 hour recall method)
   b) Food frequency/ Dietary pattern
   c) Questions on Food habits of taxi drivers
IV. Health information
   a) Assessment of morbidity pattern
   b) Questions related to impact on health

c) Personal hygiene assessment

V. Questions related to lifestyle information of taxi drivers

6. Statistical analysis and statistical tools: After collection of the data the appropriate statistical tool will be applied to find out the result of the research study, which is given below:-

a) Percentage
b) Arithmetic mean
c) Weighted mean
d) Rank
e) Standard deviation
f) correlation coefficient

1) Location of study

The present study entitled "Nutritional and health assessment and management of lifestyle factors of taxi drivers" was conducted in different areas of district Kanpur Nagar like Aryan Nagar, Swaroop Nagar, Tilak Nagar, Geeta Nagar, Kalyanpur, Chunni Ganj, Azad Nagar, Fajalganj, Kakadev, Nawab Ganj, Naveen Nagar etc. of Uttar Pradesh. Kanpur is a major industrial town of Uttar Pradesh, the northern state of India. This town is situated on the south bank of river Ganga, located 80 km west of Lucknow, the state capital. It is also known as the industrial capital of the state. Kanpur district (Kanpur Nagar District) is one of the major industrial districts of Uttar Pradesh, India. It is a part of Kanpur Division and its district headquarters is in Kanpur city. Due to very high population. It was divided in two districts namely Kanpur Nagar and Kanpur Dehat in the year 1977 to ensure smooth and proper administration. It was reunited again in the year 1979 but later on again separated in the year 1981. Old name of Kanpur was "Kanhpur" which was a little town at the bank of Holy Ganga. The study was conducted different localities of Kanpur Nagar the researcher selected this place because it was convenient for the researcher and it has a wide range of accessibility options.

2) Sample selection and sample size

For the present study, different area of Kanpur Nagar district purposively selected for collecting data. In this study people were selected from different area

of Kanpur, who were taxi drivers. The sample size of 100 was taken and sample was selected by purposively sampling method.

3) Period of study

The total study duration was from January to July 2024. The self-structured questionnaire was prepared in the month of December 2023. And for the analysis process, data was collected during the month of February to April 2024 via offline survey and personal interview methods.

4) Sampling techniques-"purposive and random sampling"

This research study focuses on the research methodology and design selected for this proposed study, which incorporate the overall structure of the study of the taxi drivers in Kanpur Nagar. There are two approaches used in research, qualitative and quantitative research. But quantitative research is unable to consider the individuality of human experience and for this reason qualitative approach is more suited to the proposed study Qualitative research aim to help understand social phenomena emphasizing the experience, attitude, and view in the form of words, based on observation and interview.

5) Tools for data collection

The data collection was carried out during the months of February to April 2024. The respondents were contacted at personal level. Personal interview were held with respondents and their responses were recorded. The question were asked in local language. The self- structured questionnaire was framed in order to collect information to obtain the objective of study. The questionnaire consist of some following section.

1. General information
2. Nutritional information
    a) Anthropometric assessment
    b) Clinical assessment
3. Dietary information
    a) Assessment of nutrient intake (24 hour recall method)

b) Food frequency/ Dietary pattern

c) Questions on Food habits of taxi drivers

4. Health and Morbidity based questions

5. Questions related to lifestyle information of taxi drivers

'Question-cum Interview Method'

The primary tool used in the study was a detailed performa. The information was obtained from the respondents by 'questionnaire-cum interview method. A questionnaire cum interview method was used to collect reliable data. This is designed keeping in the mind the objective of the study. Questionnaire cum interview schedule will be made for collecting following investigation:

1. General Information
2. Nutritional Assessment
3. Clinical Assessment
4. Dietary History
5. Dietary Intake
6. Lifestyle of Taxi Drivers
7. Health and Morbidity Assessment
8. Statistical Analysis

1) General Information

With the help of questionnaire the general information was collected like name, age, sex, address, religion, occupational status, educational status, income, total income of family and marital status.

2) Nutritional Assessment

This section includes assessment of nutritional profile of the subjects through anthropometric measurements with the determination of weight, height, and these value used to calculate Body Mass Index (BMI). Dietary intake of each person was taken using 24-hr dietary recall method and food frequency method.

A) Anthropometric Measurements

Anthropometry provides the single most portable, universally applicable, inexpensive and non-invasive technique for assessing size, proportions and composition of the human body. It reflects both health and nutritional status and predicts performance, health and survival.

a) Body height

The height of an individuals is influenced by genetic and environmental factors. The maximum growth potential of an individual is decided by the hereditary factors. In the environmental factors the most important being nutrition and morbidity **(Mithell 1997)**. The heights of the respondents were recorded with the help of measuring rod. The Anthropometric rod with centimeter scale having least count 0.1 cm was used for measuring height.

b) Body weight

Weighing machine was used for measuring weight in kg. with least count 0.5 kg machine was kept on the level surface and 0 error was adjusted before weighing. The respondents were asked to stand on it straight and erect without any footwear and the weight was recorded.

c) Body Mass Index (BMI)

The ratio weight (kg) and height (m) is referred to as body mass index (BMI). The BMI has good correlation with fatness and it may also be used as indicator of health risk. Body for change believed to be related to inadequate nutrition.

BMI is calculated by using formula:

$$\text{Weight (kg)/height } (m)^2$$

$$\text{BMI} = \text{Weight (kg)/Height } (m)^2$$

3) Clinical Examination

Clinical assessment consist of routine history and physical examination to detect physical sign and symptoms. **(Gibson, 1990)**. The physical changes as defined by jelliffe (2015) examine those changes, believed to be related to inadequate nutrition, that can be seen as felt in superficial epithelial tissue

especially the skin, eyes, hairs and baccal mucosa or in organs near the surface of the body. In order to find nutritional adequacy clinical examination was done. Hair was examined for dryness, loss of lusterless and easily plucked out, face examined for swollen. Eyes were examined for light pink and pale lips were examined for angular stomatitis. Tongue was examined for edematous and gloss its. Gums were examined for bleeding and swollen skin was examined for pale and dryness. Nails were examined for thin and flat, koilonychias.

4) Dietary History

Dietary history gains exact information about the nutritional status of an individuals through dietary information questionnaire. History about dietary habits, frequency of meals, and serving sizes needs to be collected. As mentioned earlier, details about food preferences, restrictive diets, and allergies should be noted. Whether the respondent is vegetarian or non-vegetarian they prefer eating outside the home? Are they consuming alcohol or cigarettes? Are they suffering from any other health related problems through dietary history.

5) Dietary intake: analysis of nutrients by:

i. **24 hour recall method:** In this method the person is asked to recall all food and drink (in terms of measuring bowls, cups and spoons) consumed previous day, noting the nature and amount of each item.

The data is collected to be translated in to mean intake (grams) of food in terms of cereals, pulses, vegetables, fruits, meal: meat, fish, and eggs and mean intake of nutrients per adult mar. value or "consumption unit"

This exercise requires the use of suitable tables of food composition. The excellent guide used for carrying out the analysis is the Indian Council of Medical Research (ICMR) Public Nutritive value of Indian Foods.

The amount of raw food stuff consumed by an adult was collected by using formula:

Raw amount of particular Total raw quality of food stuff Individual intake of

$$\textbf{food stuff consumed by individual from the given preparation} = \frac{\textbf{used in that preparation}}{\textbf{Total cooked quantity of that prepared}} \textbf{ X } \textbf{cooked amount of that preparation}$$

ii. **Food Frequency:** It is structured questionnaire that lists common food groups to obtain information about the frequency of use it is helpful in relation to obesity and various risk factors by helping to determine use of specific group of foods over an extended period of time. The subject is given a list of foods and asked to indicate intake per day, per week, and per month. This method is inexpensive and easy to administer. It is more accurate than the 24 hour recall.

6) Lifestyle of taxi drivers

This section consisted information regarding lifestyle and behaviour of Taxi Drivers. Questions related to general activity pattern including working time, household chores, screen time, sitting time, sleeping duration, level of stress/anxiety, consumption of tobacco, cigarette, alcohol, dietary supplements following any diet therapy, duration and type of exercise, habit of skipping meal, skipped meal and reason for skipped meals were asked from each respondent. Taxi drivers lead dynamic lifestyles, navigating city streets for long hours, often facing irregular schedules. They encounter diverse passengers, manage traffic stress, and balance personal safety. Despite challenges, they provide crucial transportation services, fostering unique urban experiences.

7) Health and Morbidity Assessment

Health indicators provide numerical information about which health problems are important for which population groups. Many health problems are related to drivers socioeconomic position. Morbidity is the percentage of people with a health problem in a population. Incidence is the number of new cases of a disease, or people with a particular disease, that occur in a given period of time. Prevalence is the total number of cases of disease at a given time or during a given period. Many drivers with one (chronic) health problem have other health

problems at the same time. This is called multimorbidity and can have additional negative effects on the quality of life.

Assessing health and morbidity in drivers is crucial for ensuring road safety and overall public health. The health status of drivers can significantly impact their ability to operate vehicles safely, affecting their reaction times, decision-making abilities, and physical capacity to control the vehicle. Morbidity assessment involves evaluating the prevalence and impact of diseases and health conditions among drivers, which can inform interventions to reduce accidents and improve driver well-being. Assessment of different type of disease by asked about vision, hearing, cardiovascular health, and musculoskeletal and chronic conditions such as diabetes, hypertension, and sleep apnea, which can be occurred by driving factors.

8) Statistical analysis and statistical tools

After collection of the data the appropriate statistical tool will be applied to find out the result of the research study. The collected data were classified in the light of the objective of the study. The classified data were tabulated and analysed statistically with the help of approved statistical techniques.

1. Percentage
2. Arithmetic mean
3. Weighted mean
4. Rank
5. Standard deviation
6. Correlation coefficient

1. Percentage

Single comparisons were made on the basis of the percentage, for drawing percentages, the frequency of particular cells was multiplied by 100 and divided by total number of respondents in that particular category to which they belonged.

$$\textbf{Percentage} = \frac{\text{The sum of all the respondents}}{\text{Total number of all the respondents}} \text{X}100$$

2. Arithmetic mean ($\overline{X}$)

The average **($\overline{X}$)** was calculated by adding the total scores obtained by the respondents and divided it by the total number of respondents using the following formula:

$$\overline{X} = \frac{\sum x}{N}$$

Where,

$\overline{X}$ = Average of mean

$\sum x$ = total number of score obtained by respondents

N = Total number of respondents

3. Weighted mean

It is average which is calculated on the basis of respective weights and coding. If X_1, X_2, X_3 …….. X_n are the codes and W_1, W_2, W_3……. W_n are their respective weights, then:

$$\text{Weighted mean} = \frac{W_1X_1 + W_2X_2 + W_3X_3 + \ldots W_nX_n}{W_1 + W_2 + W_3 + \ldots W_n}$$

$$\text{W X W} = \sum_{i=1}^{n} \frac{W_iX_i}{W_i}$$

4. Rank

Ranks were calculated from the value obtained from the weighted mean scores. So, ranks were given on the basis of the highest to the lowest frequency/mean score.

5. Standard deviation (σ)

S.D. is the square root of mean of the squares of all deviations, the directions being measured from the arithmetic mean of the distribution. It is commonly developed by symbol (σ) for simulation.

$$S.D. = \sqrt{\frac{\sum(x-\bar{x})^2}{N}}$$

Where,

S.D. = Standard deviation

$(x-\bar{x})^2$ = Variables from mean

n = Total number of items

6. Correlation coefficient

Karl Pearson has given a coefficient of correlation for the measurement of linear relationships, which exists between two variables. If X and Y are two variables and if E(X,Y) =0 then correlation coefficient (r) is

$$r = \frac{Cov.(X, Y)}{Var.(X), Var.(Y)}$$

or

$$\frac{\sum xy}{\sum x^2, \sum y^2}$$

Where,

$$\sum xy = \left[\sum xy - \frac{\sum x \sum y}{n}\right]$$

$$\sum x^2 = \left[\sum x^2 - \frac{(\sum x)^2}{n}\right]$$

$$\sum y^2 = \left[\sum y^2 - \frac{(\sum y)^2}{n}\right]$$

CHAPTER-IV

RESULTS AND DISCUSSION

The present study entitled "**Nutritional and health assessment and management of lifestyle factors of taxi drivers in Kanpur City"** was carried during 2023-24. The results obtained during the survey are being systematically presented in this chapter under the following headings and sub headings:

4.1 General information of Taxi Drivers.

4.2 Anthropometric Measurement of the Taxi Drivers.

4.2.1 Height

4.2.2 Weight

4.2.3 BMI

4.2.4 Health status according to BMI.

4.3 Clinical information of the Taxi Drivers.

4.4 24-hours dietary recall method (Nutrients Intake).

4.5 Dietary pattern of the Taxi Drivers.

4.6 Food habits of the taxi drivers.

4.7 Taxi drivers job impact on their psychological and physical health.

4.8 Assessment of morbidity pattern of Taxi drivers.

4.9 Personal hygiene assessment of Taxi Drivers.

4.10 Lifestyle of the Taxi Drivers.

4.1 General Information

4.1.1 Age

Table 4.1.1: Distribution of respondents on the basis of age group.

Age group	Frequency	Per cent	Mean age in years	S.D.
Up to 30 years	20	20.0	27	2
30 to 40 years	51	51.0	34	2
40 to 50 years	25	25.0	43	3
50 years and above	4	4.0	53	5
Total	100	100.0	36	7

Table 4.1.1: The perusal of table reveals the distribution of respondents according to age group, 51.0 percent of taxi drivers were found to be in the age group 30-40 years with mean age 34 years and standard deviation 2 years followed by 25.0 percent of respondents belonged to the age group 40-50 years with mean age 43 years and standard deviation 3 years in the study area of Kanpur City. 20.0 percent of taxi drivers belonged to the age group up to 30 years with mean age 27 years and a standard division 2 years where as only 4.0 percent of the respondents belonged to the age group 50 years and above with mean age 53 years and standard deviation 5 years in the research study area. Hence majority of respondents were found to be in the age group 30-40 years.

4.1.2 Religion

Table 4.1.2: Distribution of respondents on the basis of religion.

Religion	Frequency	Per cent
Hindu	78	78.0
Muslim	22	22.0
Total	100	100.0

Table 4.1.2: Shows the distribution of taxi drivers on the basis of religion, 78.0 percent of respondents belonged to Hindu religion and 22.0 percent of respondents

belonged to Muslim religion. This distribution indicates a majority of Hindus in the 100 taxi drivers.

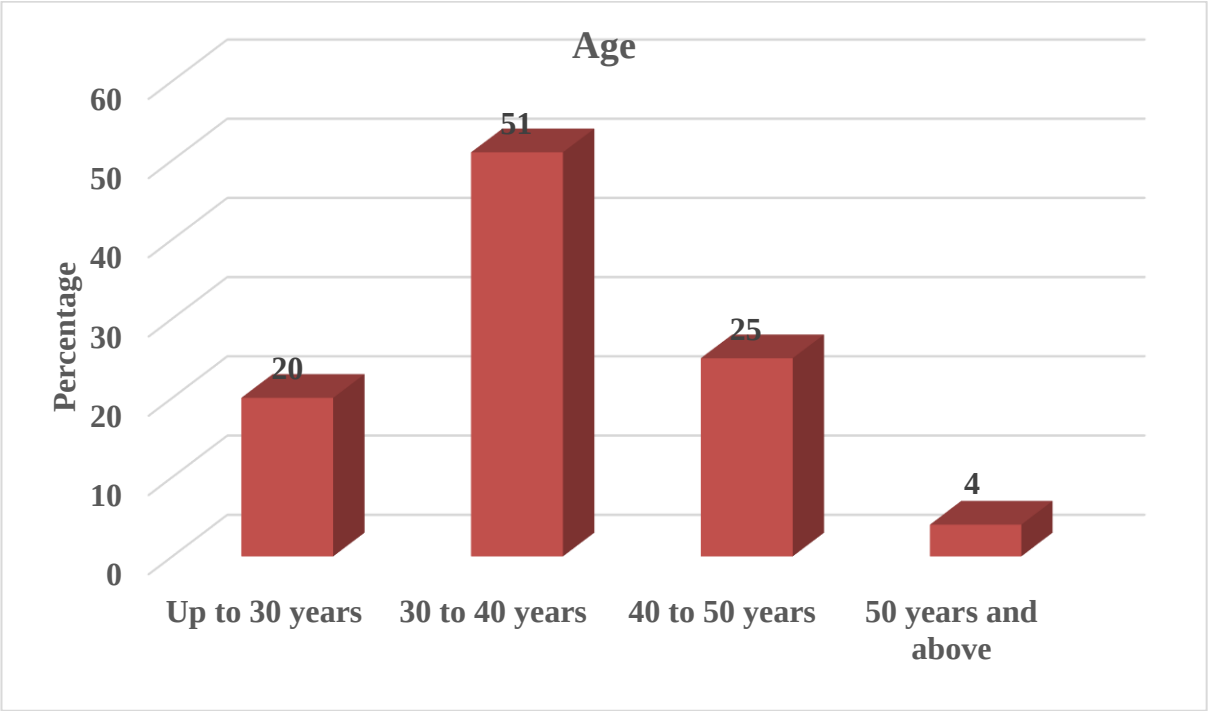

Table 4.1.1: Distribution of respondents on the basis of age group.

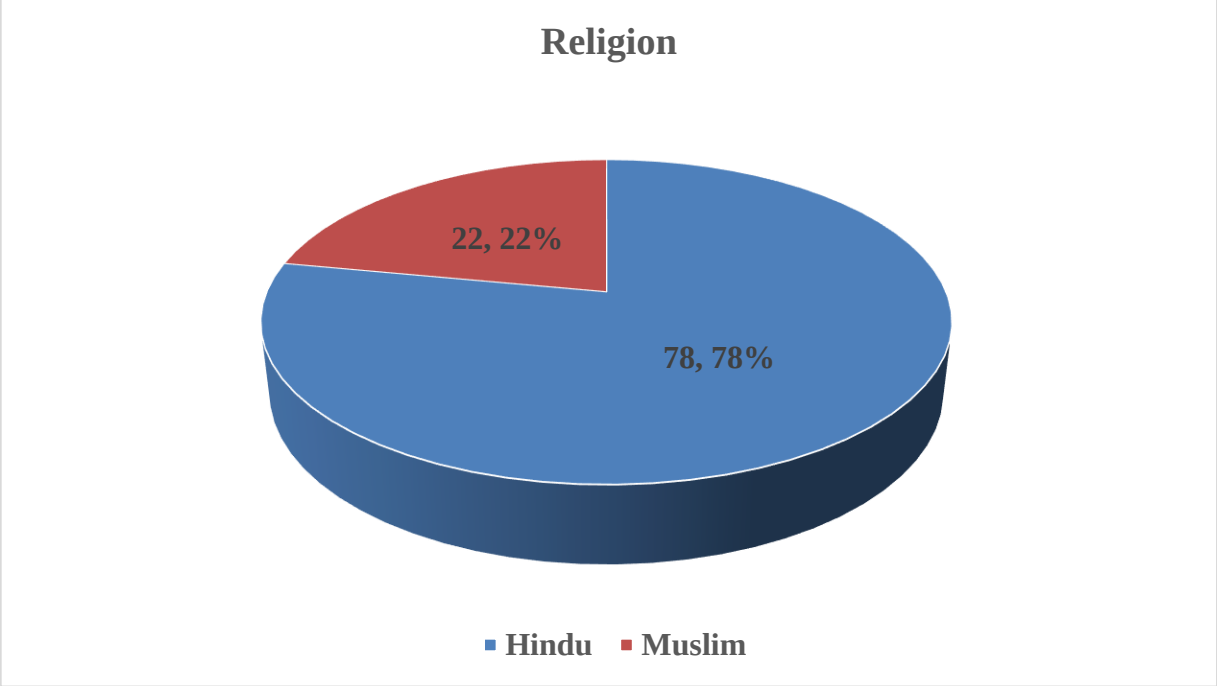

Table 4.1.2: Distribution of respondents on the basis of religion.

4.1.3 Caste

Table 4.1.3: Distribution of respondents on the basis of caste.

Caste	Frequency	Per cent
General	25	25.0
OBC	47	47.0
SC/ST	28	28.0
Total	100	100.0

Table 4.1.3: The data present in the table shows the distribution of taxi drivers on the basis of caste, 47.0 percent of respondents belonged to the OBC category, 28.0 percent of respondents belonged to the SC/ST category and 25.0 percent of taxi drivers belonged to the general caste in the research study area of Kanpur City. Majority of the respondents belonged to the OBC category.

4.1.4 Education

Table 4.1.4: Distribution of respondents on the basis of education.

Education	Frequency	Per cent
Illiterate	26	26.0
Primary	12	12.0
Secondary	19	19.0
Intermediate and above	43	43.0
Total	100	100.0

Table 4.1.4: Reveals the distribution of respondents on the basis of education, 43.0 percent of taxi drivers were having education of intermediate and above level, 26.0 percent of respondents were found illiterate and 19.0 percent of taxi drivers were found in secondary level while 12.0 percent of respondents were found in primary level of education. Hence majority of the respondent belonged to the intermediate level of Education.

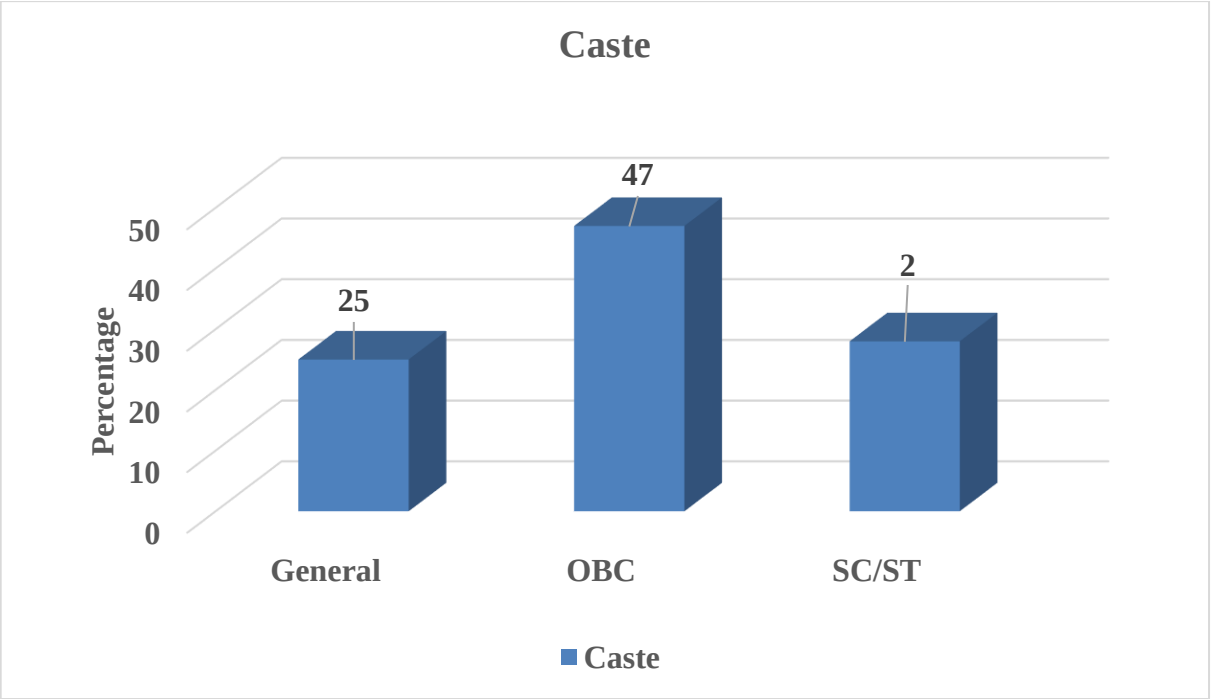

Table 4.1.3: Distribution of respondents on the basis of caste.

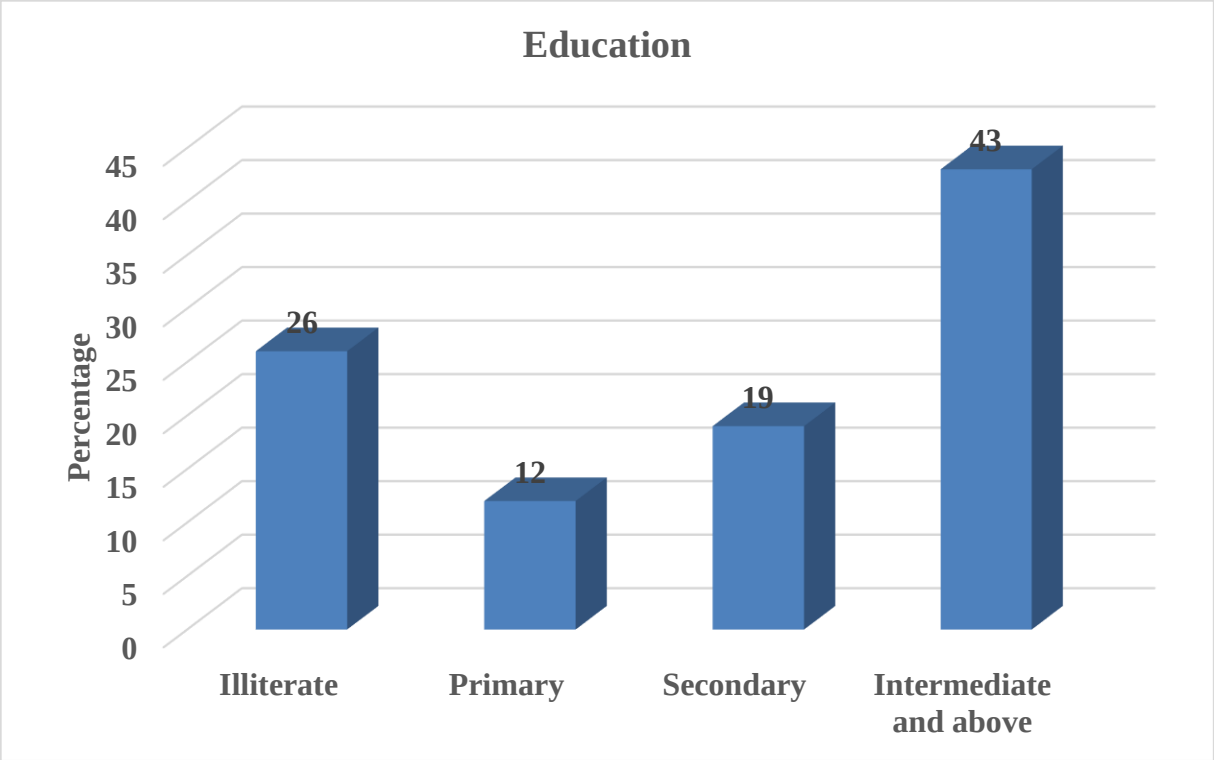

Table 4.1.4: Distribution of respondents on the basis of education.

4.1.5 Marital Status

Table 4.1.5: Distribution of respondents on the basis of marital status.

Marital Status	Frequency	Per cent
Un married	32	32.0
Married	68	68.0
Total	100	100.0

Table 4.1.5: Indicates the distribution of taxi drivers according to marital status, 68.0 percent of respondents were found to be married while 32.0 percent of taxi drivers were found to be unmarried. Majority of the respondents were found married.

4.1.6 Type of Family

Table 4.1.6: Distribution of respondents on the basis of type of family.

Type of Family	Frequency	Per cent
Nuclear	48	48.0
Joint	33	33.0
Extended	19	19.0
Total	100	100.0

Table 4.1.6: Shows the distribution of taxi drivers on the basis of family type, 48.0 percent of taxi driver belonged to the nuclear family, 33.0 percent of taxi driver belonged to the Joint family where as 19.0 percent of taxi drivers belonged to the extended family. Hence majority of the taxi drivers belonged to the nuclear type of family.

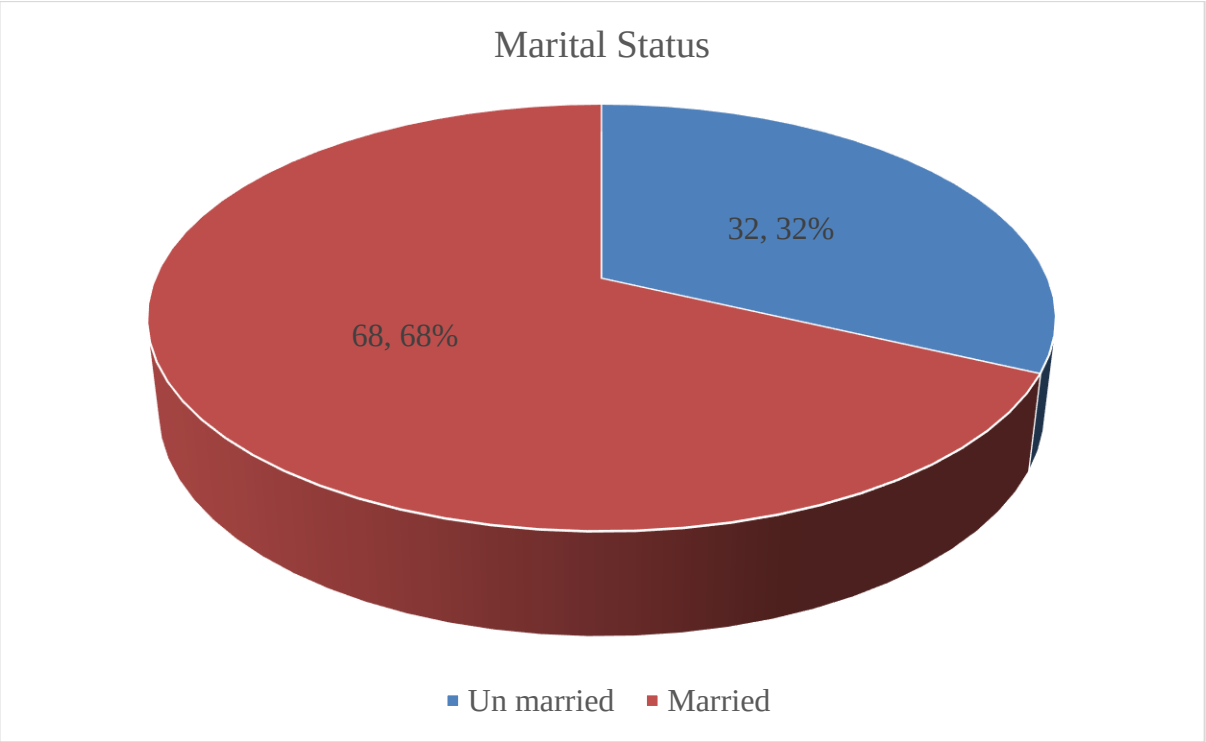

Table 4.1.5: Distribution of respondents on the basis of marital status.

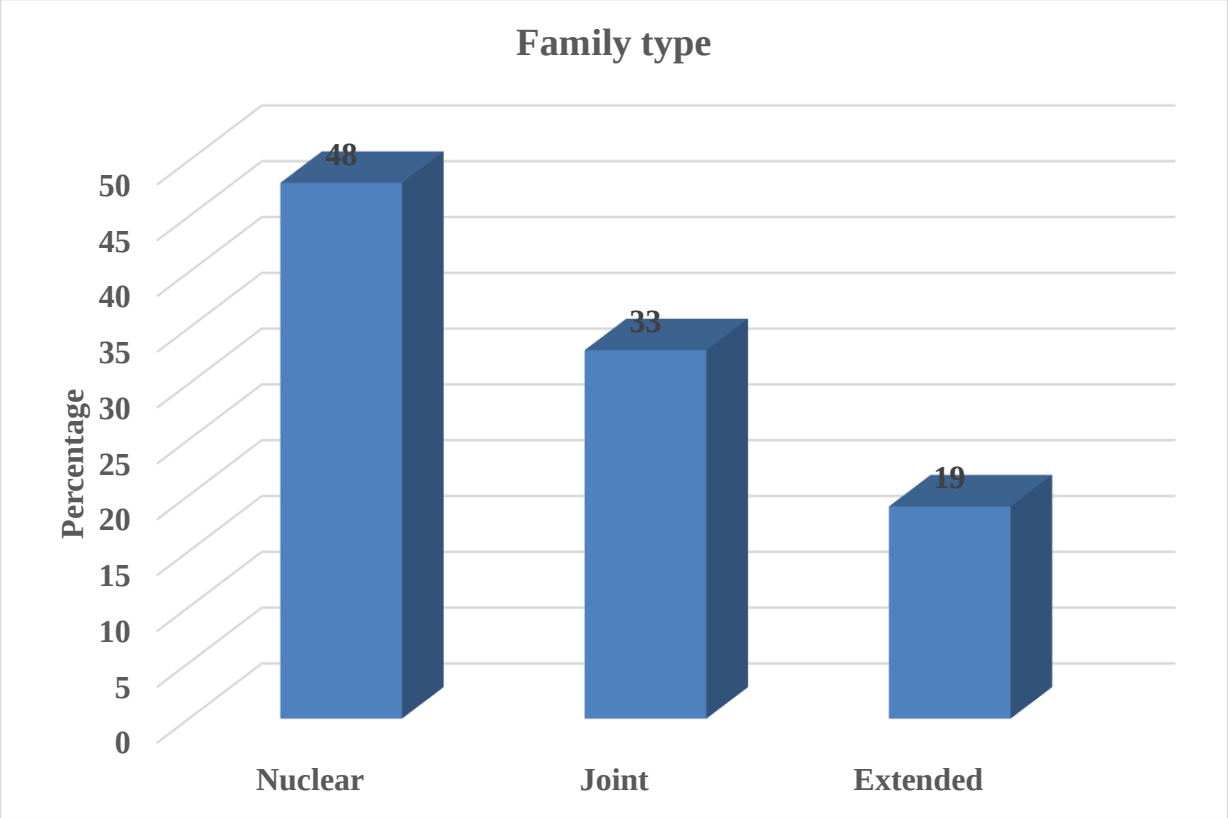

Table 4.1.6: Distribution of respondents on the basis of type of family.

4.1.7 Income of Taxi Drivers

Table 4.1.7: Distribution of respondents on the basis of income.

Income	Frequency	Per cent	Mean income in Rs.	S.D.(Rs.)
Up to Rs.15000	36	36.0	12124	1703
Rs. 15000 to Rs. 20000	46	46.0	16170	1253
Rs. 20000 to Rs. 25000	11	11.0	21091	1300
Rs. 25000 and above	7	7.0	26571	2507
Total	100	100.0	15983	4307

Table 4.1.7: Shows the distribution of respondents on the basis of income, 46.0 percent of the taxi drivers were earning Rs. 15,000 to Rs. 20,000 with mean income Rs. 16170 and standard deviation Rs. 1253 followed by 36.0 percent of the taxi drivers were earning Up to Rs. 15,000 per month with mean Rs. 12124 and standard deviation Rs. 1703 in the Kanpur city taxi drivers and 11.0 percent of respondents earned Rs. 20,000 to Rs. 25,000 with mean income Rs. 21091 and standard deviation Rs. 1300 while 7.0 percent of taxi drivers were earning Rs. 25,000 and above per month. Majority of taxi drivers were earning Rs. 15,000 to Rs. 20,000 per month income.

4.1.8 Number of Family Members

Table 4.1.8: Distribution of respondents on the basis of family members.

Family Size	Frequency	Per cent
Up to 3 members	38	38.0
4 to 5 members	44	44.0
6 to 7 members	14	14.0
8 members and above	4	4.0
Total	100	100.0

Table 4.1.8: Shows the distribution of taxi drivers according to family size, 44.0 percent of respondents were having families with 4 to 5 members, Families up to 3 members were representing 38.0 percent. Those with 6 to 7 members represented the 14.0 percent while larger families of 8 or more members were the least percentage making up just 4.0 percent. This data indicates that mid-sized families (4 to 5 members) was predominant in the study area, followed by smaller families, with larger family sizes being relatively rare.

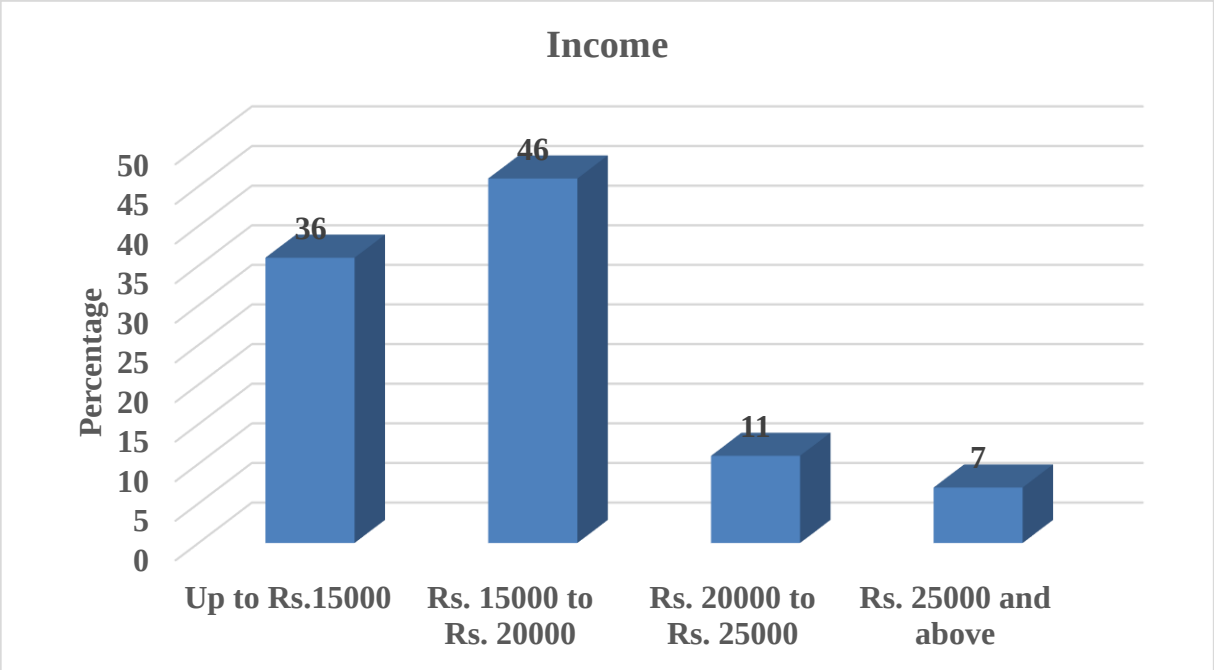

Table 4.1.7: Distribution of respondents on the basis of income.

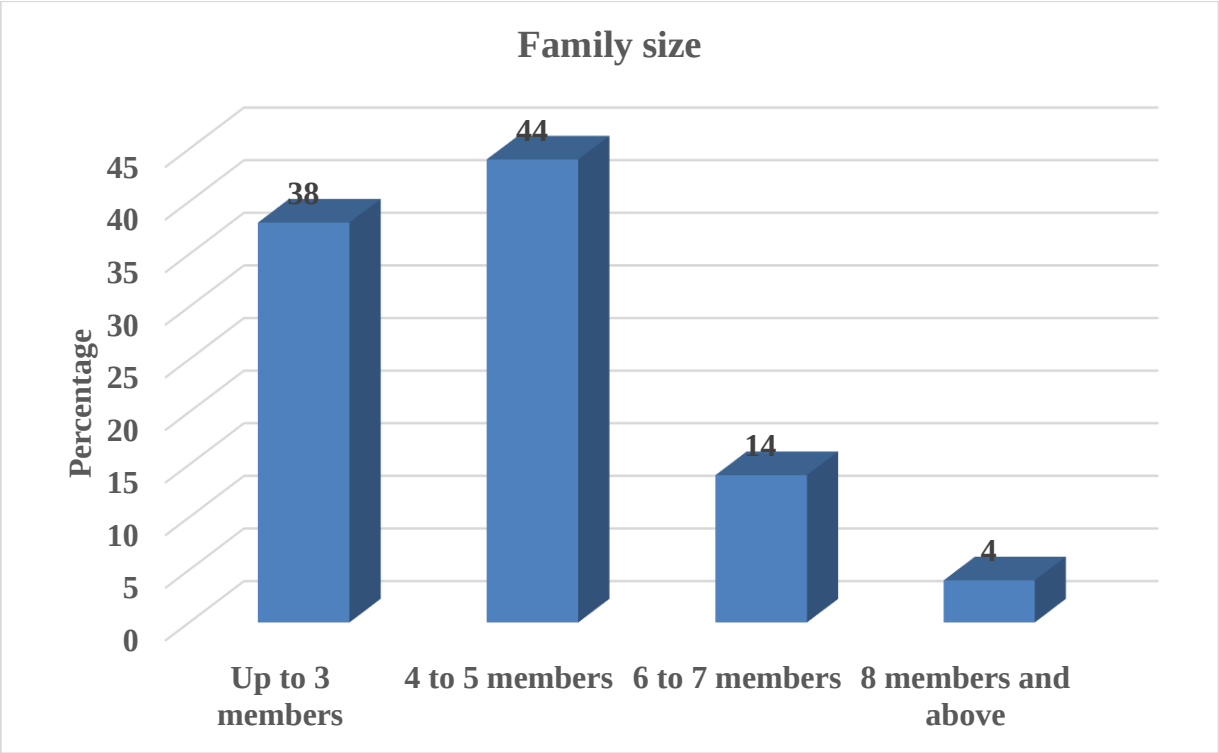

Table 4.1.8: Distribution of respondents on the basis of family members.

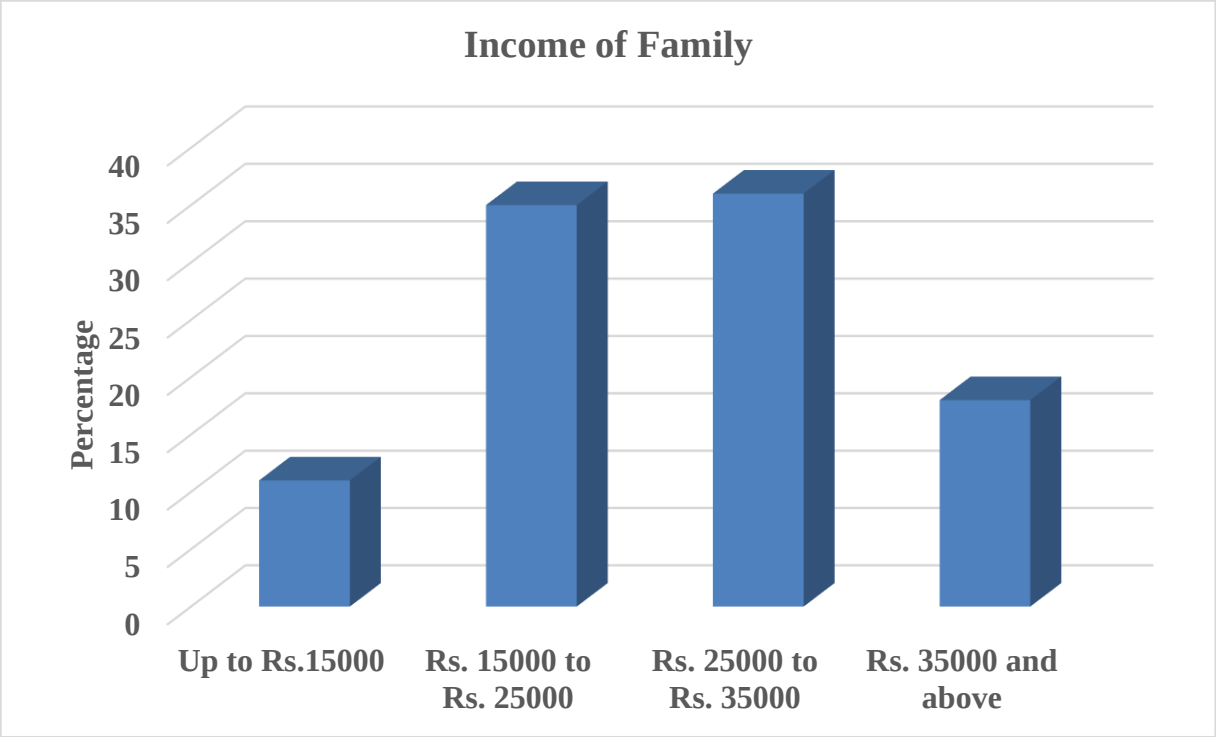

Table 4.1.9: Distribution of respondents on the basis of total income of family.

4.1.9 Total Income of Family

Table 4.1.9: Distribution of respondents on the basis of total income of family.

Total Income of Family	Frequency	Per cent	Mean income in Rs.	S.D. (Rs.)
Up to Rs.15000	11	11.0	12682	1620
Rs. 15000 to Rs. 25000	35	35.0	17686	2813
Rs. 25000 to Rs. 35000	36	36.0	28889	3115
Rs. 35000 and above	18	18.0	40083	3797
Total	100	100.0	25200	9565

Table 4.1.9: Shows the Distribution of respondents on the basis of total income of the family, 36.0 percent of families were earning between Rs. 25,000 to Rs. 35,000 with mean income Rs. 28889 and standard deviation Rs. 3115 followed by 35.0 percent of families were earning between Rs. 15,000 to Rs. 25,000 with mean income Rs. 17686 and standard deviation Rs. 2813 and 18.0 percent of families earned Rs. 35,000 and above with mean income Rs. 40083 and standard deviation Rs. 3797 while 11.0 percent of families earned Up to Rs. 15,000 with mean income Rs. 12682 and standard deviation Rs. 1620. Majority of the families were earning between Rs. 25,000 to Rs. 35,000.

4.2 Anthropometric Measurement

Table 4.2.1: Distribution of height of the respondents as compared to ICMR standard.

Age group	Height (cm)				
	Per cent	**Mean**	**S.D.**	**ICMR Standard**	**Percent deficit**
Up to 30 years	20.0	163.2	7.7	177	8.42
30 to 40 years	51.0	161.6	10.9		
40 to 50 years	25.0	161.5	8.8		
50 years and above	4.0	166.3	3.6		
Total	100.0	162.1	9.6		
Correlation coefficient (r)	0.1126			p>0.05	

Table 4.2.1: Reveals the height of the respondents as compared to ICMR standard, 51.0 percent of respondents belonged to the 30 to 40 years with mean height 161.6 cm and standard deviation 10.9 cm whereas 25.0 percent of the respondents belonged to the age group 40 to 50 years with mean height 161.5 cm and standard deviation 8.8 cm in the study area. 20.0 percent of taxi drivers belonged to the age group up to 30 years with mean height 163.2 cm and standard deviation 7.7 cm while only 4.0 percent of respondents belonged to the age group 50 year and above and have a mean height 166.3 cm and standard deviation 3.6 cm in the study area. The overall mean height of respondents was found to be 8.42 percent deficit as compared to ICMR standard. The correlation coefficient between age group and height of the respondents was found to be non- significant at 5% level of significance.

Oyesanya *et al.* (2023) found all (100%) of the respondents were males with a mean age of 38.7±0.49 years. The mean height and weight of the respondents were found to be 1.68±0.86 m and 68.50±8.47 kg respectively.

Table 4.2.2: Distribution of weight of the respondents as compared to ICMR standard.

Age group	Weight (kg)				
	Percent	Mean	S.D.	ICMR Standard	percent Deficit
Up to 30 years	20.0	64.4	13.2	65	2.8
30 to 40 years	51.0	63.0	12.8		
40 to 50 years	25.0	62.4	12.9		
50 years and above	4.0	64.5	7.1		
Total	100.0	63.2	12.6		
Correlation coefficient (r)	0.1005			P>0.05	

Table 4.2.2: Reveals the weight of the respondents as compared to ICMR standard, 51.0 percent of respondents belonged to the 30 to 40 years with mean weight 63 kg and standard deviation 12.8 kg while 25.0 percent of the respondents belonged to the age group 40 to 50 years with mean weight 62.4 kg and standard deviation 12.9 kg in the study area. 20.0 percent of taxi drivers belonged to the age group up to 30 years with mean weight 64.4 kg and standard deviation 13.2 kg whereas only 4.0 percent of respondents belonged to the age group 50 year and above were having mean weight 64.5 kg and standard deviation 7.1 kg in the study area. The overall mean weight of the respondents was found to be 2.8 percent deficit from ICMR standard. The correlation coefficient between age group and

weight of the respondents was found to be non- significant at 5% level of significance.

Table 4.2.3: Distribution of BMI of the respondents on the basis of age group.

Age group	**BMI (kg/m^2)**			
	Frequency	**Percent**	**Mean**	**S.D.**
Up to 30 years	20	20.0	24.1	3.9
30 to 40 years	51	51.0	23.9	3.6
40 to 50 years	25	25.0	23.7	3.5
50 years and above	4	4.0	23.1	3.2
Total	100	100.0	23.8	3.6
Correlation coefficient (r)		0.1252		p>0.05

Table 4.2.3: Reveals the BMI of the respondents as per age group, 51.0 percent of respondents belonged to the 30 to 40 years with mean BMI 23.9 and standard deviation 3.6 followed by 25.0 percent of respondents belonged to 40 to 50 years age group with mean BMI 23.7 and standard deviation 3.5 and 20.0 percent of respondents belonged to the age group up to 30 years with mean BMI 24.1 and standard deviation 3.9 while only 4.0 percent of taxi drivers belonged to the age group 50 years and above with mean BMI 23.1 and standard deviation 3.2 in the study sample. The correlation coefficient between age group and BMI of the respondents was found to be non- significant at 5% level of significance.

4.2.4 Nutritional status according to BMI

Table 4.2.4: Distribution of nutritional status of respondents as compared to standard BMI.

Standard BMI range	Nutritional Status	Percent	Average Weight (kg)	Reference Weight (kg)	Average Weight gain/loss %
Less than18.5 kg/m²	Under weight	5.0	45.8	65	-29.5
18.5- 24.9 kg/m²	Normal	54.0	57.0	65	-12.3
25.0- 29.9 kg/m²	Over weight	39.0	74.4	65	14.4
30 kg/m² and above	Obesity	2.0	95.0	65	46.1

Table 4.2.4: Shows the distribution of taxi drivers according to nutritional status, 54.0 percent of respondents were having normal nutritional status with 12.3 percent weight loss followed by 39.0 percent of taxi drivers were found to be overweight with 14.4 percent weight gain in the study sample. 5.0 percent of respondents were found to be underweight with 29.5 percent weight loss and only 2.0 percent of taxi drivers were having obesity with 46.1 percent weight gain by respondents. While majority of respondents were found to be nutritional health status.

Oyesanya *et al.* (2023) stated in their study more than half (59.7%) of the respondents were having normal BMI, 34.3% and 0.3% were found to be

overweight and obese respectively and only 5.7% were found to be underweight. The above study supports current study.

Table 4.2.5: Correlation Coefficient between anthropometric measurements of the respondents and independent variables.

Anthropometric measurements	Correlation coefficient		
	Education	**Family size**	**Income**
Height	0.1488	0.0559	0.1091
Weight	0.0917	0.1342	0.2580*
BMI	0.0819	0.0131	0.2024*

Table 4.2.5: Shows the correlation coefficient between anthropometric measurements of the respondents and independent variables, Education of the taxi drivers were affects positively with height, weight and BMI. Hence all these measurements fully affected by education of the respondents, As per family size of the taxi drivers were significantly correlated with height, weight and BMI, while on the basis of income of taxi drivers were also positively correlated with height, weight and BMI. Hence anthropometric measurement of the taxi drivers significantly correlated with independent variables.

4.3 Clinical Assessment

Table 4.3.1: Distribution of respondents on the basis of assessment of general appearance.

General appearance	Frequency	Percent
Healthy	64	64.0
Unwell	26	26.0
Ill	10	10.0
Total	100	100.0

Table 4.3.1: Indicates the distribution of respondents as per assessment of general appearance, 64.0 percent of taxi drivers were having healthy general appearance followed by 26.0percent of taxi drivers were found to be unwell in the study area. 10.0 percent of taxi drivers were suffering from ill. Hence this data shows maximum respondents were having healthy general appearance.

Table 4.3.2: Distribution of respondents on the basis of assessment of hair.

Hair	Frequency	Percent
Normal	66	66.0
Lustreless	8	8.0
Easily pluck able	26	26.0
Total	100	100.0

Table 4.3.2: Indicates the distribution of taxi drivers as per assessment of hair, 66.0 percent of respondents were having normal hair indicating the majority, 26.0 percent of respondents were having easily pluckable hair and only 8.0 percent of respondents were having lustreless hair which indicating a smaller group with dull hair. The above table highlights that maximum taxi drivers had normal hair whereas rest of the respondents were suffering from hair damage due to inadequate

intake of protein, vitamins, zinc, iron which are essential for hair health. Psychological problem i.e. stress, headache etc. were the main reasons of hair problems.

Table 4.3.3: Distribution of respondents on the basis of assessment of face.

Face	Frequency	Percent
Normal	59	59.0
Moon	19	19.0
Any other	22	22.0
Total	100	100.0

Table 4.3.3: Shows the distribution of respondents on the basis of assessment of face, 59.0 percent of taxi drivers were having normal face, 22.0 percent of respondents were having any other type of face whereas only 19.0 percent of respondents were having moon face. Hence majority of respondents were having normal face in the above table.

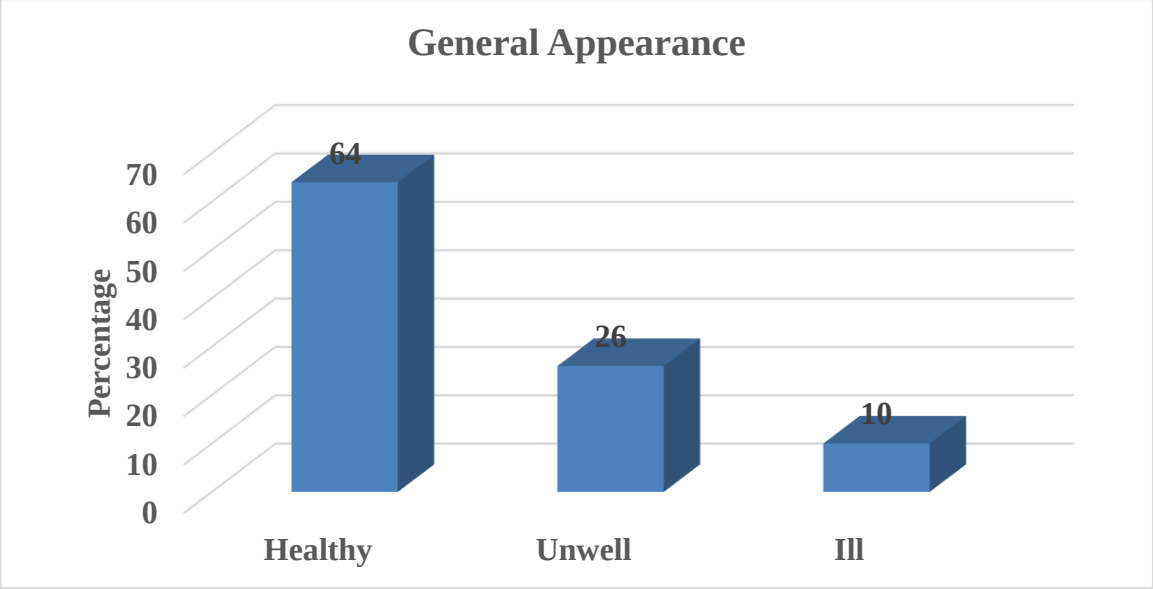

Table 4.3.1: Distribution of respondents on the basis of assessment of general appearance.

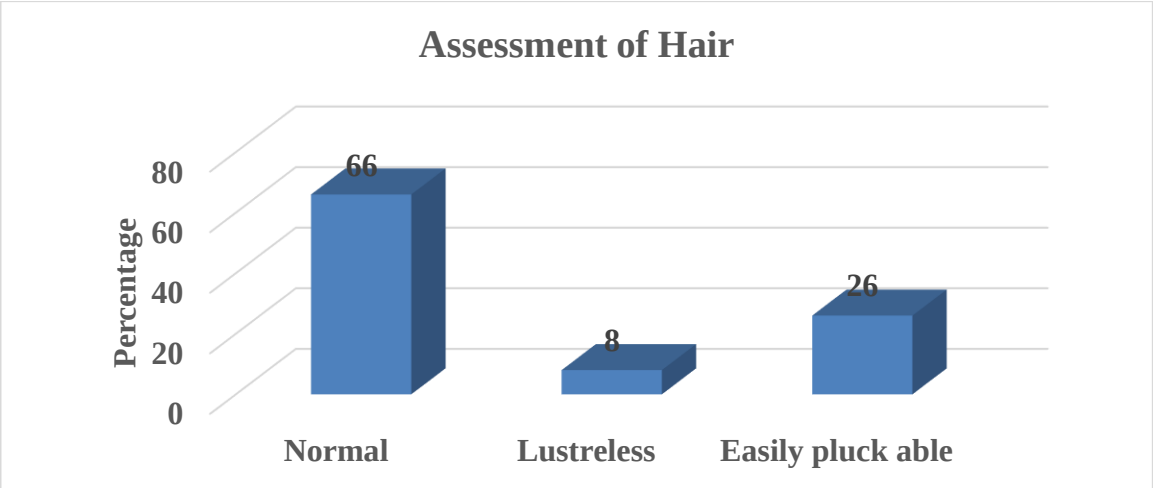

Table 4.3.2: Distribution of respondents on the basis of assessment of hair.

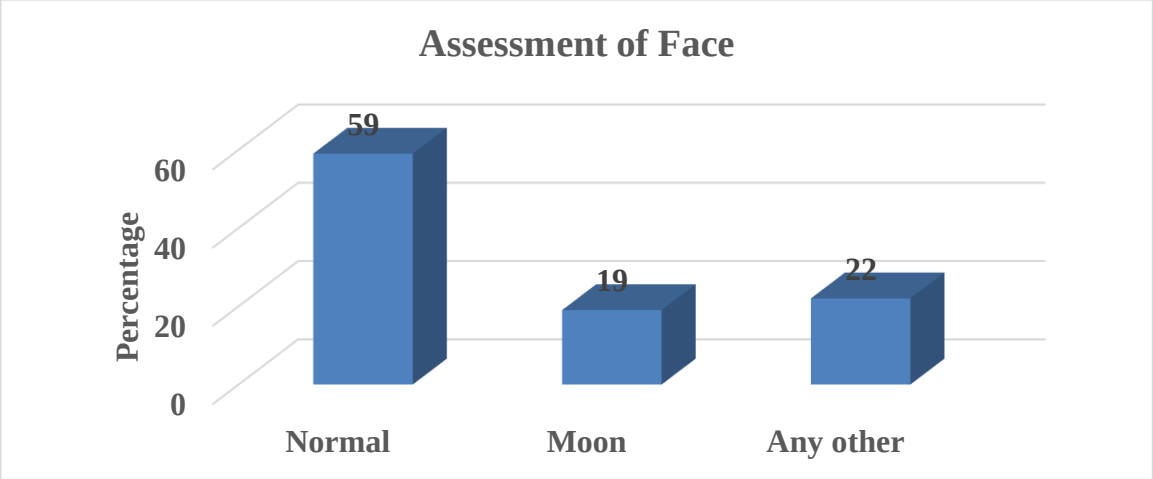

Table 4.3.3: Distribution of respondents on the basis of assessment of face.

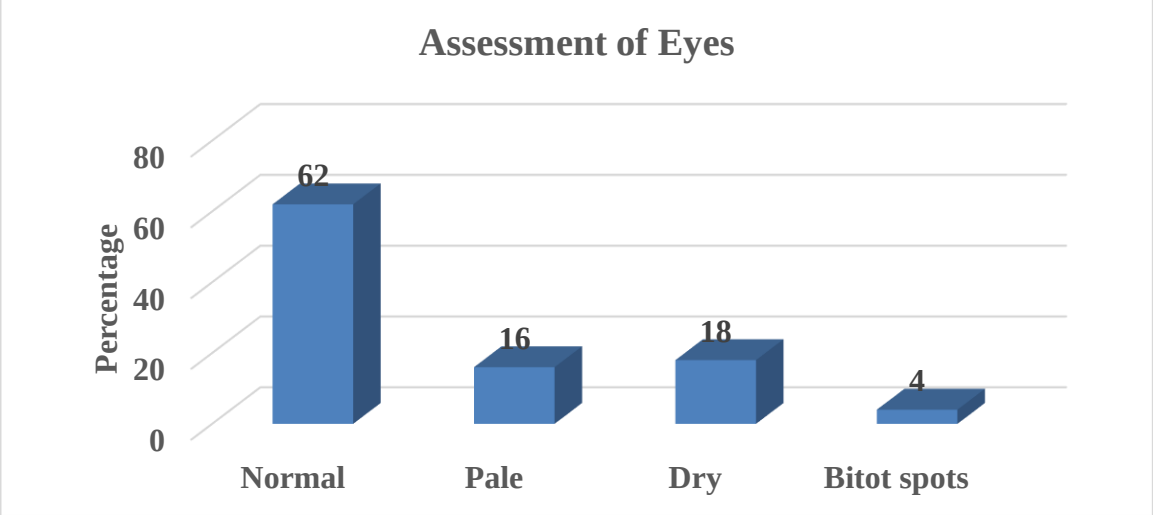

Table 4.3.4: Distribution of respondents on the basis of assessment of eyes.

Table 4.3.4: Distribution of respondents on the basis of assessment of eyes.

Eyes	Frequency	Percent
Normal	62	62.0
Pale	16	16.0
Dry	18	18.0
Bitot spots	4	4.0
Total	100	100.0

Table 4.3.4: Indicates the distribution of respondents on the basis of assessment of eyes, maximum 62.0 percent of taxi drivers were found to be normal eyes, 18.0 percent of taxi drivers were having dry eyes followed by 16.0 percent of taxi drivers were suffering from pale eyes and only 4.0 percent of respondents were having bitot spots in out of 100.0 percent of respondents. Whereas maximum respondents were having normal eyes and 40 percent of taxi drivers were facing eyes problem i.e. pale, dry and bitot spots due to vitamin A deficiency, iron deficiency and dry environment. A healthy diet rich in iron, zinc, vitamin A and E may help in reducing the risk of eyes problems.

Table 4.3.5: Distribution of respondents on the basis of assessment of cornea.

Cornea	Frequency	Percent
Normal	80	80.0
Dry	11	11.0
Opaque	9	9.0
Total	100	100.0

Table 4.3.5: Shows the distribution of respondents according to assessment of cornea, 80.0 percent of taxi drivers were having normal cornea, 11.0 percent of taxi drivers were having dry cornea and 9.0 percent of taxi drivers were having opaque cornea.

Table 4.3.6: Distribution of respondents on the basis of assessment of lips.

Lips	Frequency	Percent
Normal	75	75.0
Cheilosis	11	11.0
Swollen	10	10.0
Angular stomatitis	4	4.0
Total	100	100.0

Table 4.3.6: Shows the distribution of the taxi drivers as per assessment of lips, 75.0 percent of taxi drivers were having normal lips followed by 11.0 percent of taxi drivers were having cheilosis whereas 10.0 percent of taxi drivers had swollen lips and only 4.0 percent of respondents were found to be angular stomatitis. Hence majority of taxi drivers were having normal lips in the research study area and some of the drivers suffering from lips problem due to inadequate intake of vitamin B3 rich food i.e. beef, dairy, whole grain, GLV and tuna etc. in their diet and dehydration was also a reason for dry lips.

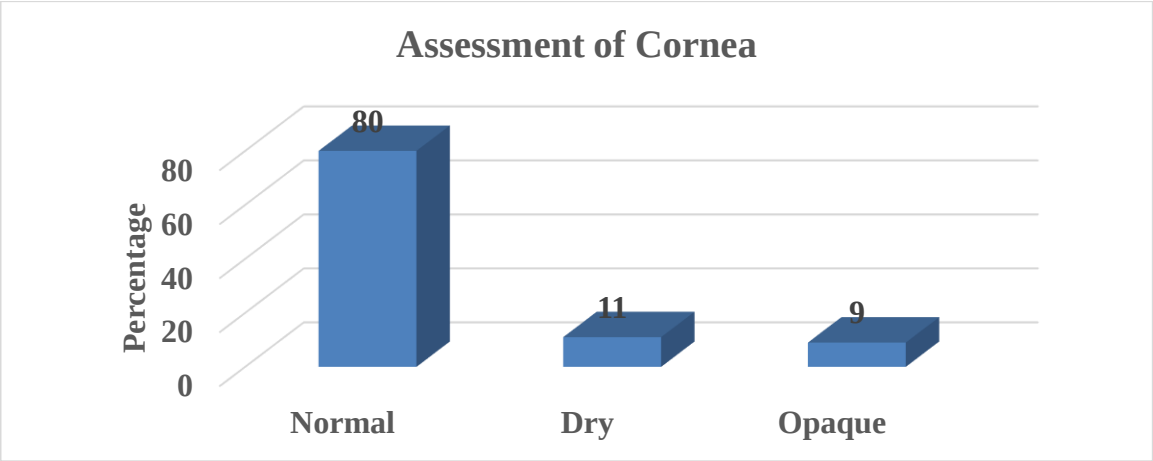

Table 4.3.5: Distribution of respondents on the basis of assessment of cornea.

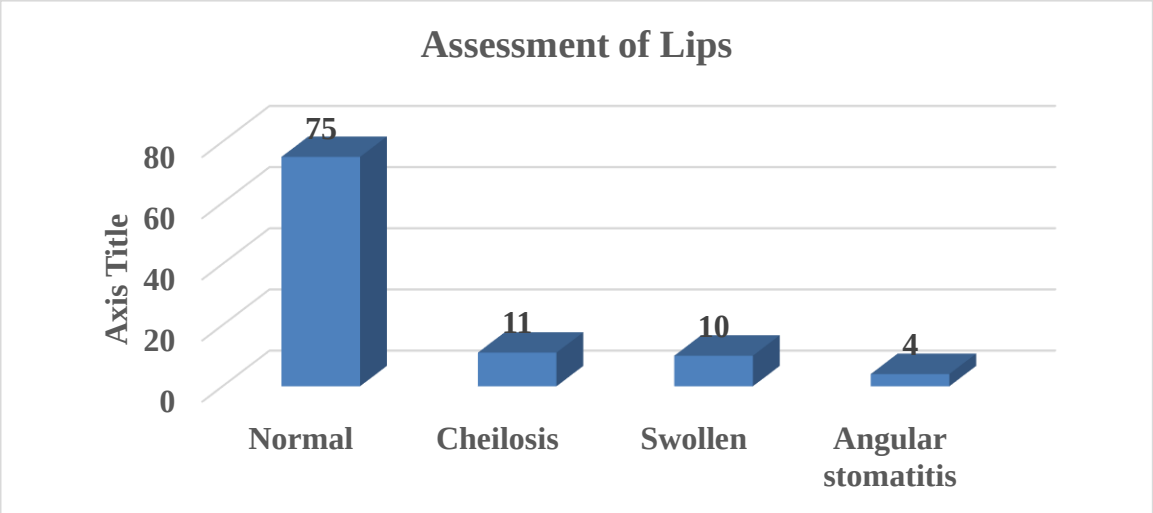

Table 4.3.6: Distribution of respondents on the basis of assessment of lips.

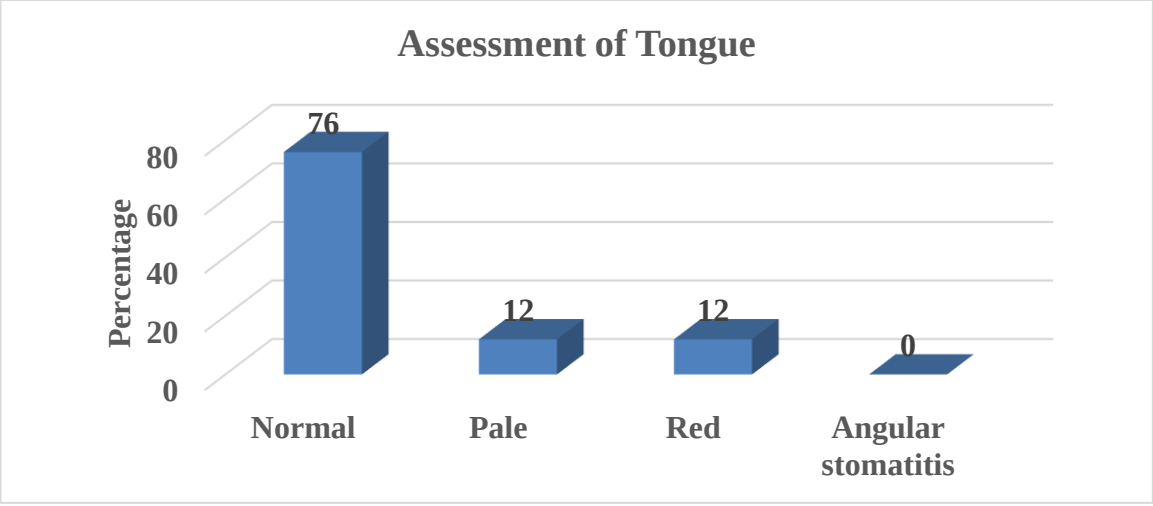

Table 4.3.7: Distribution of respondents on the basis of assessment of tongue.

Table 4.3.7: Distribution of respondents on the basis of assessment of tongue.

Tongue	Frequency	Percent
Normal	76	76.0
Pale	13	12.0
Red	11	12.0
Angular stomatitis	0	0.0
Total	100	100.0

Table 4.3.7: Shows the distribution of the taxi drivers on the basis of assessment of tongue, Maximum 76.0 percent of taxi drivers were having normal tongue, 13.0 percent of taxi drivers had pale tongue and 11.0 percent of taxi drivers were having red tongue due to deficiency of vitamin B12 and folic acid in their body. Inclusion of Vitamin B12 and folic acid rich food in diet may reduce the problem of tongue.

Table 4.3.8: Distribution of respondents on the basis of assessment of teeth.

Teeth	Frequency	Percent
Normal	63	63.0
Mottled	9	9.0
Caries	6	6.0
Stained	22	22.0
Total	100	100.0

Table 4.3.8: Shows the distribution of taxi drivers on the basis of teeth, 63.0 percent of taxi drivers were having normal teeth, 22.0 percent of taxi drivers were having stained and 9.0 percent of respondents had mottled teeth while only 6.0 percent of respondents were found to be caries teeth. Hence majority of the taxi drivers were having normal teeth while approximately 40.0 percent of taxi drivers

were suffering from different type of problem in teeth due to overconsumption of tobacco, drinks and medications in their daily lifestyle.

Table 4.3.9: Distribution of respondents on the basis of assessment of gums.

Gums	Frequency	Percent
Normal	75	75.0
Bleeding	13	13.0
Swollen	12	12.0
Total	100	100.0

Table 4.3.9: This table reveals the distribution of the respondents on the basis of assessment of gums, 75.0 percent of respondents were having normal gums followed by 13.0 percent of taxi drivers were having bleeding in gums and 12.0 percent of respondents had swollen gums. So, this table confirms that majority of the respondents were having normal gums.

Table 4.3.10: Distribution of respondents on the basis of assessment of skin.

Skin	Frequency	Percent
Normal	71	71.0
Dermatitis	10	10.0
Infection	19	19.0
Total	100	100.0

Table 4.3.10: Shows the distribution of respondents according to assessment of skin, 71.0 percent of taxi drivers were having normal skin followed by 19.0 percent of taxi drivers were found to be dermatitis in the study area of Kanpur City. Only 10.0 percent of taxi drivers were suffering from dermatitis. This data indicates that maximum of the respondents were not having any skin issues.

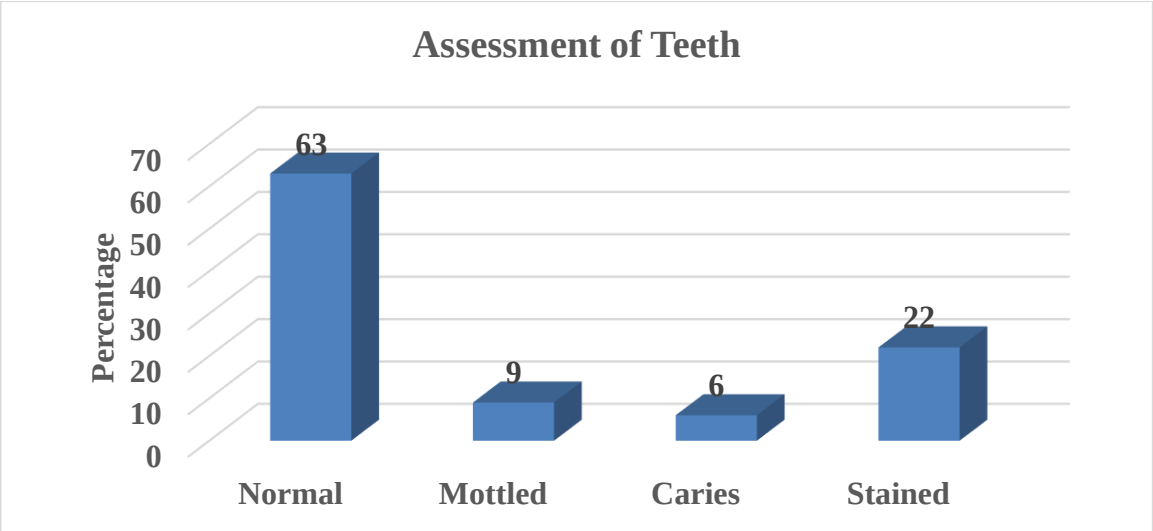

Table 4.3.8: Distribution of respondents on the basis of assessment of teeth.

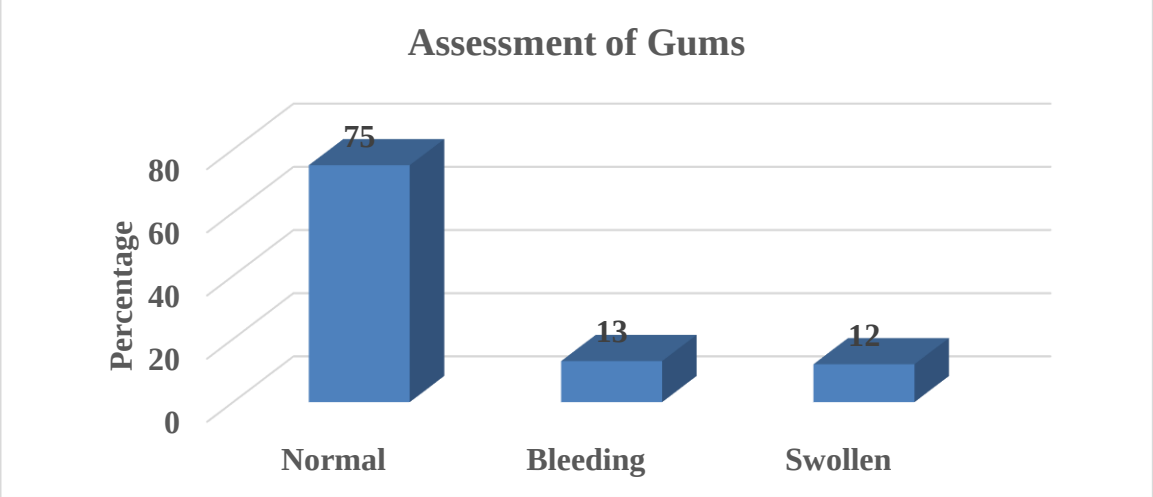

Table 4.3.9: Distribution of respondents on the basis of assessment of gums.

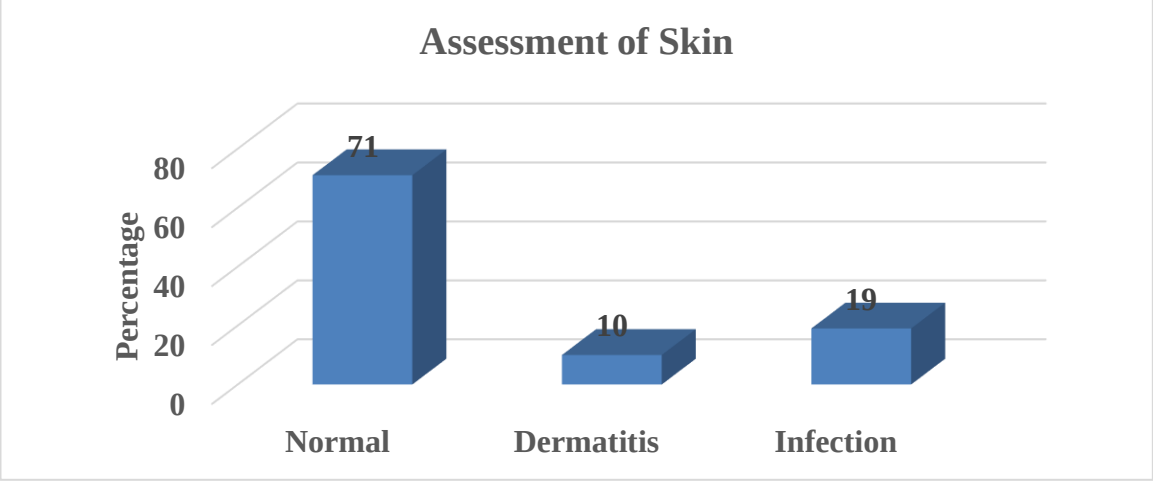

Table 4.3.10: Distribution of respondents on the basis of assessment of skin.

Table 4.3.11: Distribution of respondents on the basis of assessment of nails.

Nails	Frequency	Percent
Normal	55	55.0
Pale	30	30.0
Brittle	15	15.0
Total	100	100.0

Table 4.3.11: Reveals the distribution of respondents on the basis of assessment of nails, 55.0 percent of taxi drivers were having normal nails, 30.0 percent of taxi drivers were having pale nails while 15.0 percent of taxi drivers were found to be brittle nails. From above data shows most of the respondents had normal nails while some respondents were having pale and brittle nails due to deficiency of zinc, iron and other nutrients rich food in their diet.

Table 4.3.12: Distribution of respondents on the basis of assessment of oedema.

Oedema	Frequency	Percent
Present	22	22.0
Absent	78	78.0
Total	100	100.0

Table 4.3.12: Shows the distribution of respondents on the basis of assessment of oedema, 78.0 percent of taxi drivers were having normal body or absent oedema while oedema present in 22.0 percent of taxi drivers due to deficiency of protein in their body and prolonged illness also cause oedema.

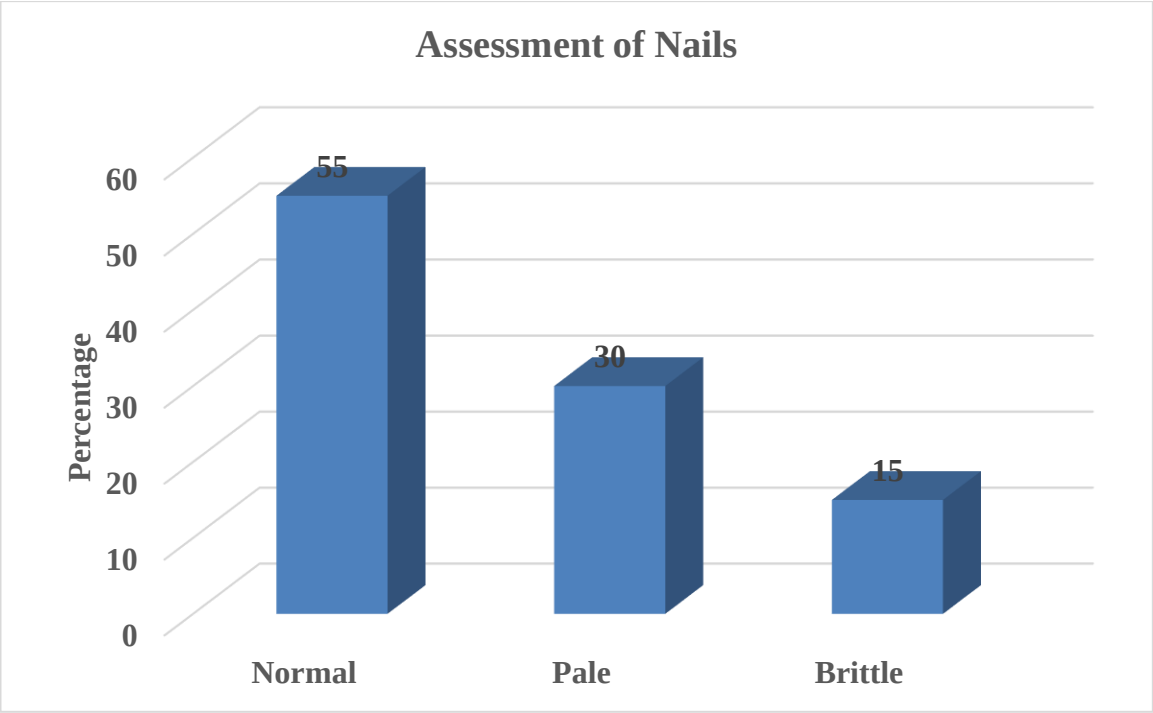

Table 4.3.11: Distribution of respondents on the basis of assessment of nails.

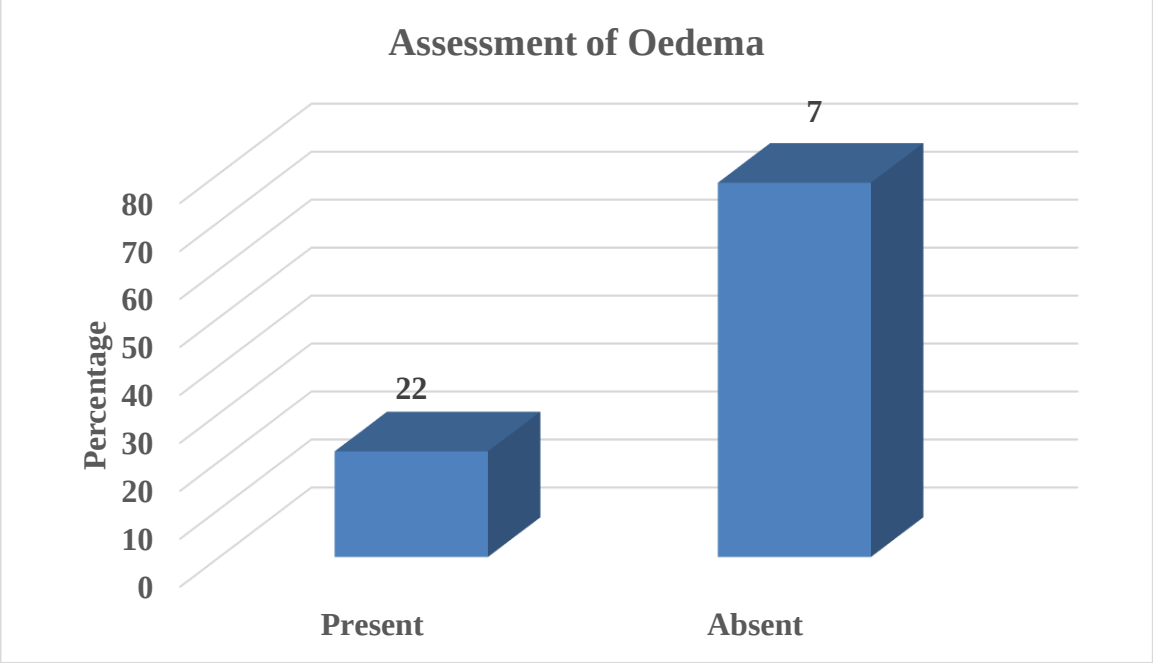

Table 4.3.12: Distribution of respondents on the basis of assessment of oedema.

4.4 24-Hours Dietary Recall Method

Table 4.4.1: Energy consumption of respondents as compared to RDA.

Age group	Energy (kcal)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	2304.0	119.5	2710.0	17.4
30 to 40 years	51.0	2109.1	108.1		
40 to 50 years	25.0	2147.6	130.2		
50 years and above	4.0	2211.3	103.5		
Total	100.0	2237.8	119.5		
Correlation coefficient (r)	0.1990*			P<0.05	

Table 4.4.1: Table depicts the energy intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), up to 30 years age group 20.0 percent of the respondents have taken energy 2304.0 kcal with standard deviation 119.5 kcal whereas in the age group 30 to 40 years 51.0 percent of respondents have taken energy 2109.1 kcal with standard deviation 108.1 kcal in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have taken average energy 2147.6 kcal with standard deviation 130.2 kcal while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average energy 2211.3 kcal with standard deviation 103.5 kcal in the study area. The average energy have taken by respondents 2237.8 kcal which was found 17.4 percent deficient from RDA. It was observed majority of the taxi drivers were skip breakfast and some drivers were skip lunch due to unbalance working schedule in a day. So most of the respondents were not consuming sufficient amount of cereals, legumes and nuts etc. The observed value of correlation coefficient (0.1990*) was significant at 5% level of significance.

Apprey *et al.* (2022) revealed that the energy intake for 176 (88.4%) of the truck drivers was inadequate as compared to daily intake. So that low energy and poor nutritional status was significantly associated with hypogonadism (low testosterone), fatigue, depression and metabolic syndrome in male.

Oyesanya *et al.* (2023) stated the average intake of calorie by drivers were found to be 1480.43 Kcal which was deficit from RDA.

Table 4.4.2: Carbohydrate consumption of respondents as compared to RDA.

Age group	CHO (gm)				
	Per cent	Mean	S.D.	RDA	Deficit percent
Up to 30 years	20.0	231.3	52.8	130	+ 67.9
30 to 40 years	51.0	211.5	44.6		
40 to 50 years	25.0	218.5	45.8		
50 years and above	4.0	239.9	55.3		
Total	100.0	218.3	47.1		
Correlation coefficient (r)	0.1055			p>0.05	

Table 4.4.2: Table reveals the CHO intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), Up to 30 years age group 20.0 percent of respondents have taken CHO 231.3 gm with standard deviation 52.8 gm whereas in the age group 30 to 40 years 51.0 percent of respondents have taken average CHO 211.5 gm with standard deviation 44.6 gm in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have taken average CHO 218.5 gm with standard deviation 45.8 gm while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average CHO 239.9 gm with standard deviation 55.3 gm in the study area. The

average CHO have taken by respondents 218.3 gm which was found 67.9 percent increased as compared to RDA due to high intake of carbohydrates rich foods (potatoes, rice, noodles, pasta, crackers, jaggery, banana and cereals etc.) in their daily diet. The observe value of correlation coefficient (0.1055) was found to be significant at 5 percent level of significance.

Sekgala *et al.* (2022) studied on South African taxi drivers and found that the diets-which were high in protein, carbohydrates and poly unsaturated fatty acids reduces triglycerides and blood pressure, whereas the intake of total fat and saturated fatty acids had the opposite effect.

Oyesanya *et al.* (2023) studied on nutritional status and nutrient adequacy of food consumed by commercial drivers and found that the average intake of CHO by commercial drivers 259.24 gm which was increased as compared to RDA (Recommended Dietary Allowance).

Whereas the current study also reveals that the CHO consumption of taxi drivers was increased as compared to RDA. So above studies supports current study.

Table 4.4.3: Protein consumption of respondents as compared to RDA.

Age group	**Protein (gm)**				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	52.8	4.1	54.0	5.9
30 to 40 years	51.0	49.8	5.4		
40 to 50 years	25.0	51.7	5.9		
50 years and above	4.0	48.4	8.8		
Total	100.0	50.8	5.5		
Correlation coefficient (r)	-0.1083			p>0.05	

Table 4.4.3: Shows the protein intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers were found up to 30 years of age group have taken average protein 52.8 gm with standard

deviation 4.1 gm while 51.0 percent of taxi drivers were found in 30 to 40 years of age group and have taken average protein 49.8 gm with standard deviation 5.4 gm in the study area of Kanpur City. In the age group 40 to 50 years 25.0 percent of respondents have taken average protein 51.7 gm with standard deviation 5.9 gm while only 4.0 percent of taxi drivers belonged to above 50 years age group and have taken average protein 48.4 gm with standard deviation 8.8 gm in the study area of Kanpur City. Total average protein have taken by respondents 50.8 gm which was found 5.9 percent deficit as compared to RDA with standard deviation 5.5 gm. It was observed majority of respondents were not consuming sufficient quantity of legumes, egg, fish, poultry, milk and milk products etc. which is high in protein. The observed value of correlation coefficient (-0.1083) was found to be significant at 5 percent level of significance.

Oyesanya *et al.* (2023) studied relationship between nutritional status and nutrients adequacy by commercial drivers. They found average intake of protein 53.09 gm by commercial drivers which was deficient as compared to RDA.

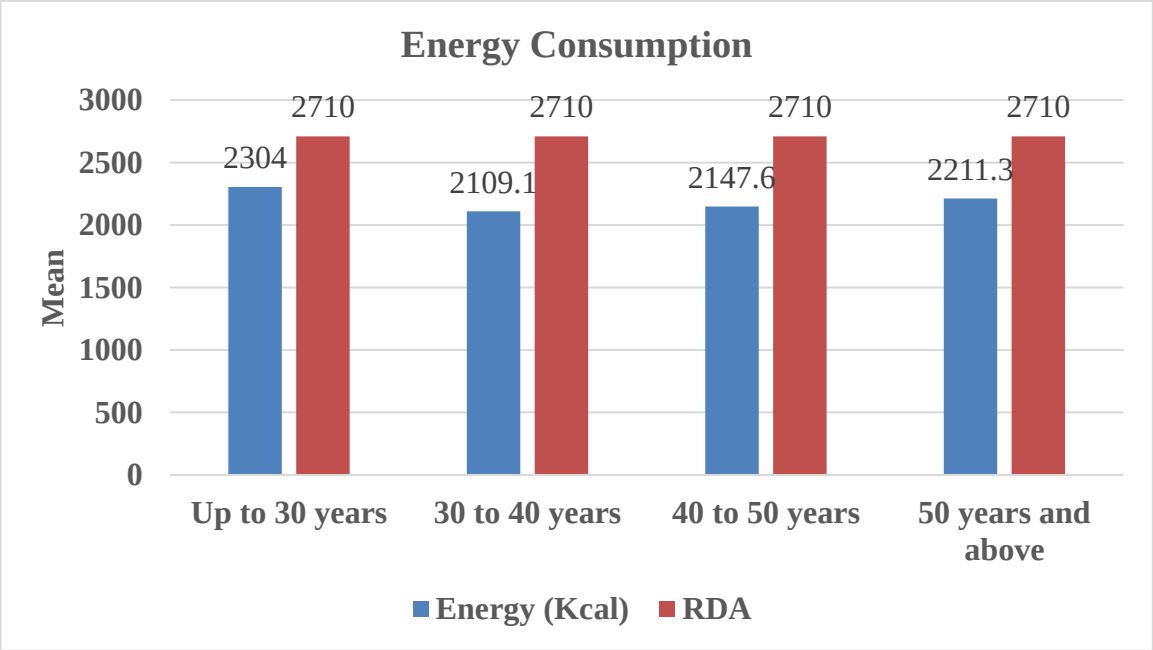

Table 4.4.1: Energy consumption of respondents as compared to RDA.

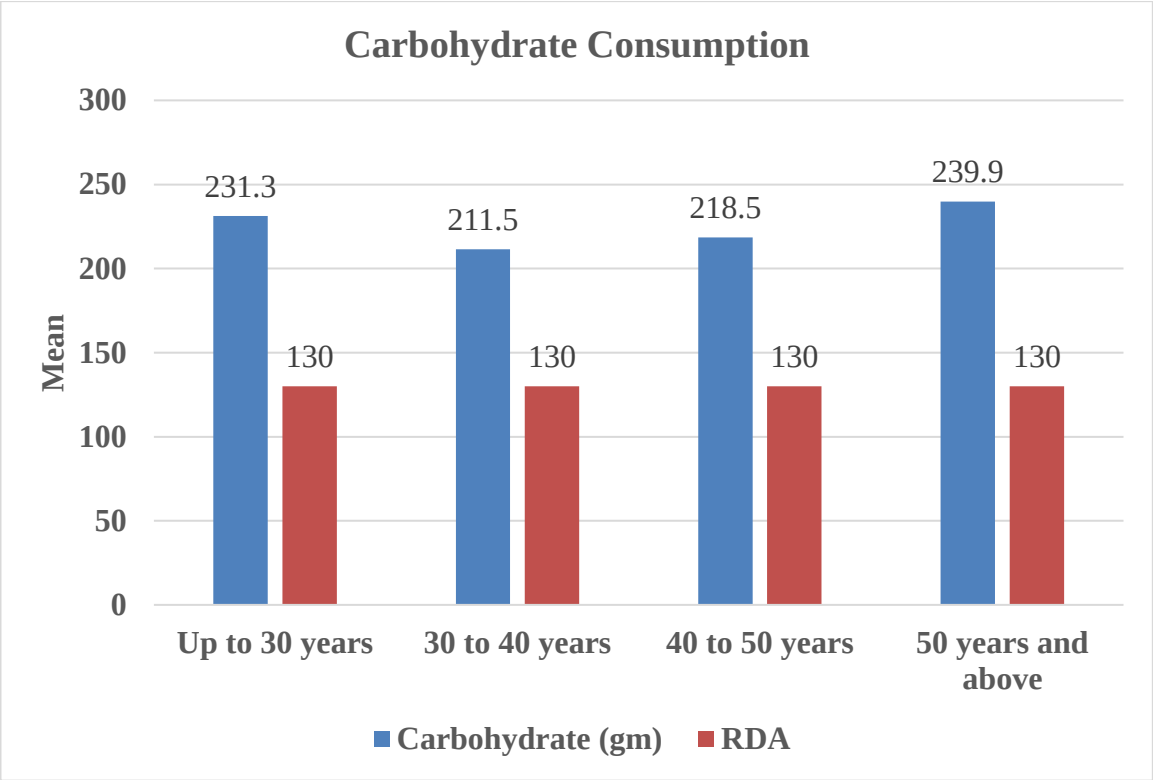

Table 4.4.2: Carbohydrate consumption of respondents as compared to RDA.

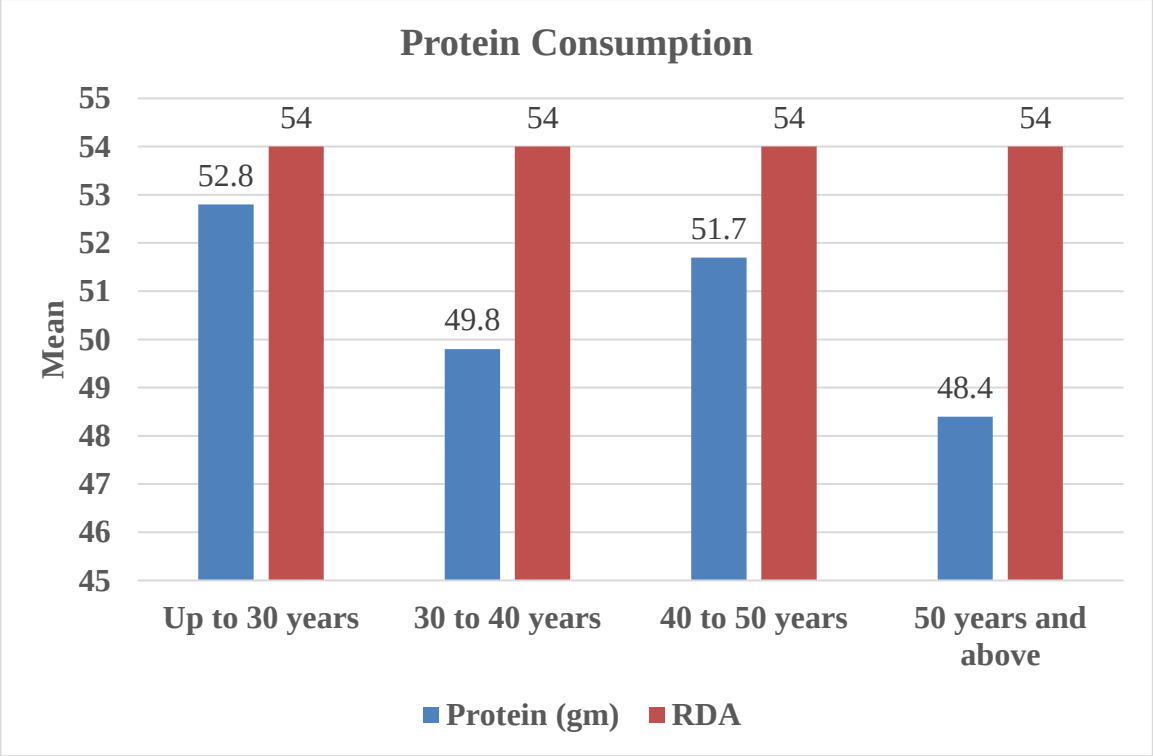

Table 4.4.3: Protein consumption of respondents as compared to RDA.

Table 4.4.4: Fat consumption of respondents as compared to RDA.

Age group	Fat (gm)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	37.9	5.6	30	+18.3
30 to 40 years	51.0	35.9	5.2		
40 to 50 years	25.0	33.3	6.2		
50 years and above	4.0	32.6	5.2		
Total	100.0	35.5	5.7		
Correlation coefficient (r)	0.2762*			P<0.05	

Table 4.4.4: The table indicates the fat intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers were found up to 30 years of age group have taken average fat 37.9 gm with standard deviation 5.6 gm while 51.0 percent of taxi drivers were found in 30 to 40 years of age group and have taken average fat 35.9 gm with standard deviation 5.2 gm in the study area of Kanpur City. Taxi drivers belonged to the age group 40 to 50 years 25.0 percent have taken average fat 33.3 gm with standard deviation 6.2 gm where only 4.0 percent of taxi drivers belonged to above 50 years age group have taken average fat 32.6 gm with standard deviation 5.2 gm in the study area of Kanpur City. Total average fat have taken by respondents 35.5 gm which was found to be 18.3 percent increased from RDA with standard deviation 5.7 gm. Taxi drivers were consuming junk food, fried and oily food and processed food during their work. The observed value of correlation coefficient (0.2762*) was found to be significant at 5 percent level of significance.

Alemu *et al. (*2020) examined that Cardiovascular Health Cardiovascular diseases (CVDs) are a prevalent concern among taxi drivers due to their moderate work nature and irregular schedules. Studies were indicated a higher prevalence of

hypertension and other CVD risk factors among taxi drivers compared to the general population. The demanding nature of taxi driving often leads drivers to rely on convenient but unhealthy food options, such as fast food and snacks high in sugar and fat.

Sekgala et al. (2022) stated that the drivers diets were high in total fat and SFAs, increased triglycerides and blood pressure with an added disadvantage of elevated FBG (fasting blood glucose).

Table 4.4.5: Calcium consumption of respondents as compared to RDA.

Age group	**Calcium (mg)**				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	373.2	62.0	1000	62.8
30 to 40 years	51.0	376.1	68.4		
40 to 50 years	25.0	367.4	73.5		
50 years and above	4.0	335.0	102.6		
Total	100.0	371.7	69.3		
Correlation coefficient (r)	0.0577			P>0.05	

Table 4.4.5: Shows the calcium intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), Up to 30 years age group 20.0 percent of respondents have taken average calcium 373.2 mg with standard deviation 62.0 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have taken average calcium 376.1 mg with standard deviation 68.4 mg in the research study area of Kanpur City. 25.0 percent of respondents belonged to the age group 40 to 50 years have taken average calcium 367.4 mg with standard deviation 73.5 mg while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average calcium 335.0 mg with standard deviation 102.6 mg in the

study area. Total average calcium have taken by respondents 371.7 mg which was found to be 62.8 percent deficient from RDA. The observed value of correlation coefficient (0.0577) was significant at 5 percent level of significance. The average of calcium consumption of taxi drivers were found very low because most of the respondents were not consuming some fruits such as kiwi, mulberries, oranges, some vegetable such as turnip green, broccoli, kale, other green leafy vegetables, milk and milk products etc.

Oyesanya *et al.* (2023) revealed in their study the mean of calcium consumption 247.55 mg by drivers which were deficient as compared to RDA. The study also revealed that vitamin C, vitamin B1, vitamin B6 and magnesium are below half (50%) of the recommended dietary allowance.

Table 4.4.6: Phosphorus intake of respondents as compared to RDA.

Age group	Phosphorus (mg)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	1014.7	99.8	1000	3.09
30 to 40 years	51.0	917.1	129.5		
40 to 50 years	25.0	913.6	114.6		
50 years and above	4.0	964.8	92.4		
Total	100.0	969.1	120.4		
Correlation coefficient (r)	0.1998*			P<0.05	

Table 4.4.6: Shows the phosphorus intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of respondents belonged to the age group up to 30 years have taken average phosphorus 1014.7 mg with standard deviation 99.8 mg followed by 51.0 percent of respondents belonged to the age group 30 to 40 years have taken average phosphorus 917.1 mg with

standard deviation 129.5 mg in the study area. The age group of 40 to 50 years representing 25.0 percent of respondents had average intake of phosphorus 913.6 mg with standard deviation 114.6 mg whereas only 4.0 percent of respondents belonged to the age group 50 years and above have taken average phosphorus 964.8 mg with standard deviation 92.4 mg. The total average phosphorus intake across all age groups were found to be 969.1 mg which was 3.09 percent deficit from RDA with standard deviation 120.4 mg. Respondents were not including phosphorus rich food like cheese, yogurt, milk, chicken, pork, organ meats, seafoods, nuts, sunflower and pumpkin seeds in diet. The correlation coefficient between age and phosphorus intake was (0.1998*) significant at 5 percent level of significance.

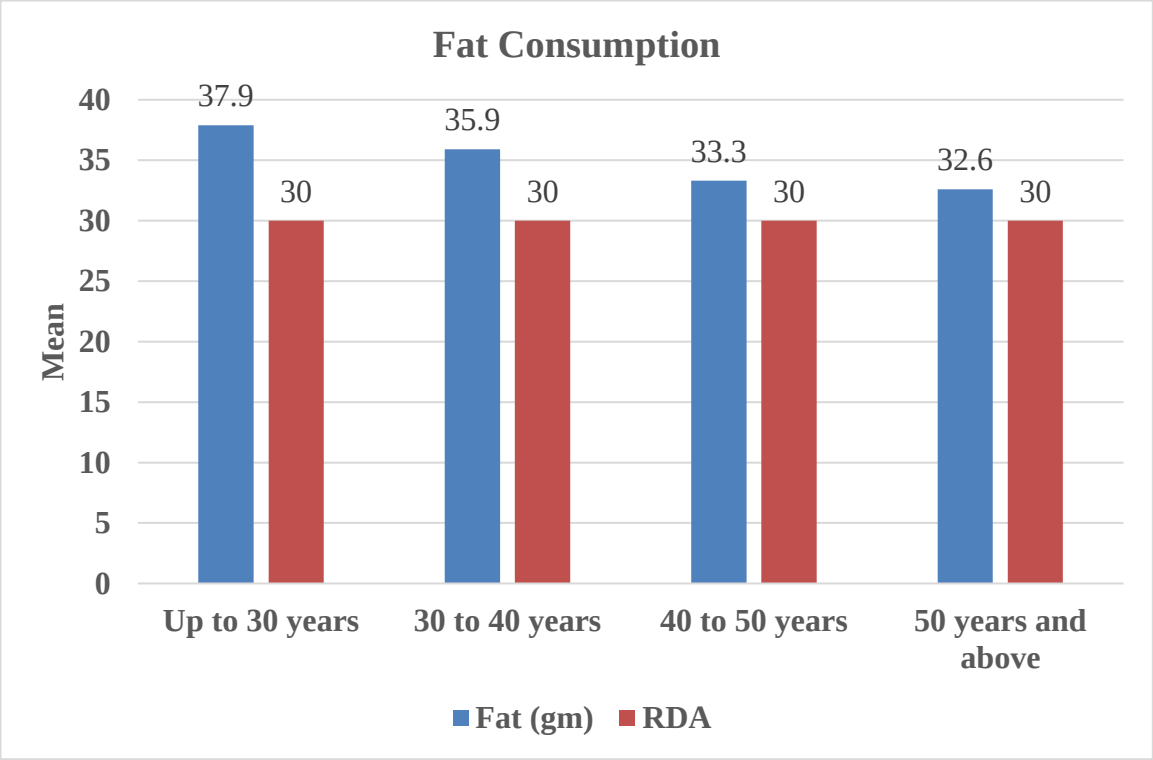

Table 4.4.4: Fat consumption of respondents as compared to RDA.

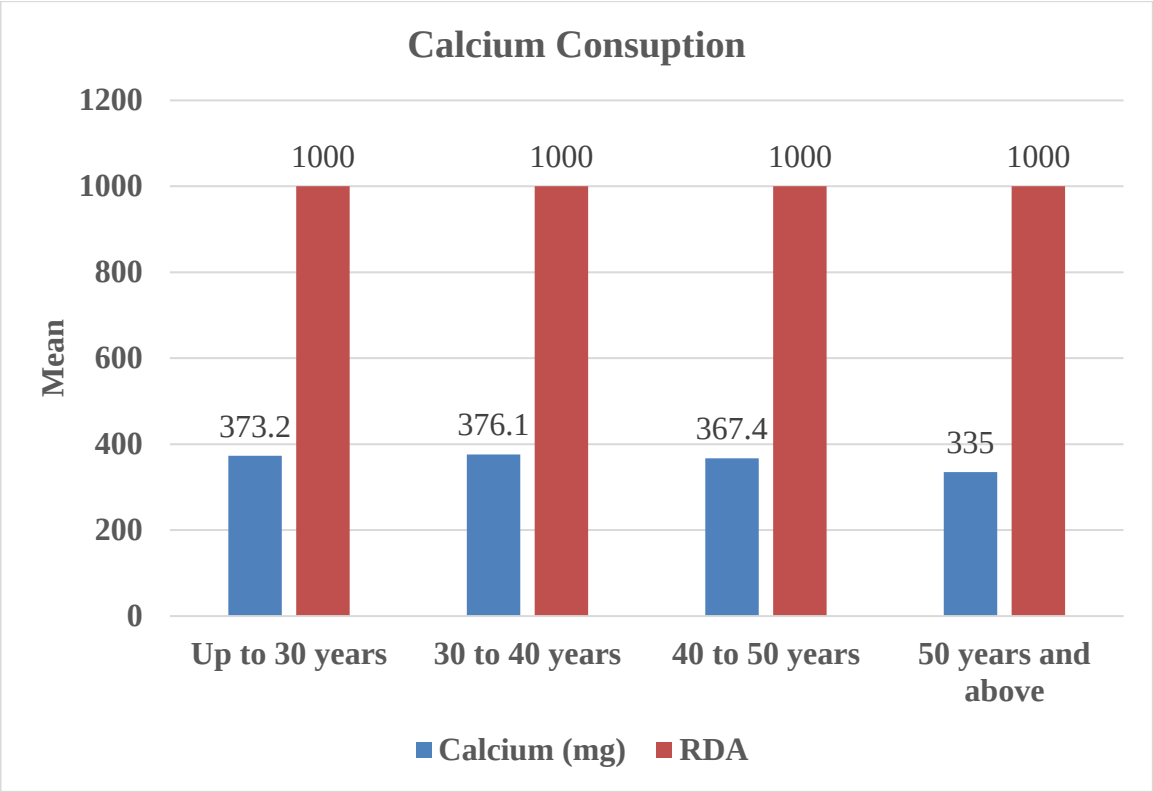

Table 4.4.5: Calcium consumption of respondents as compared to RDA.

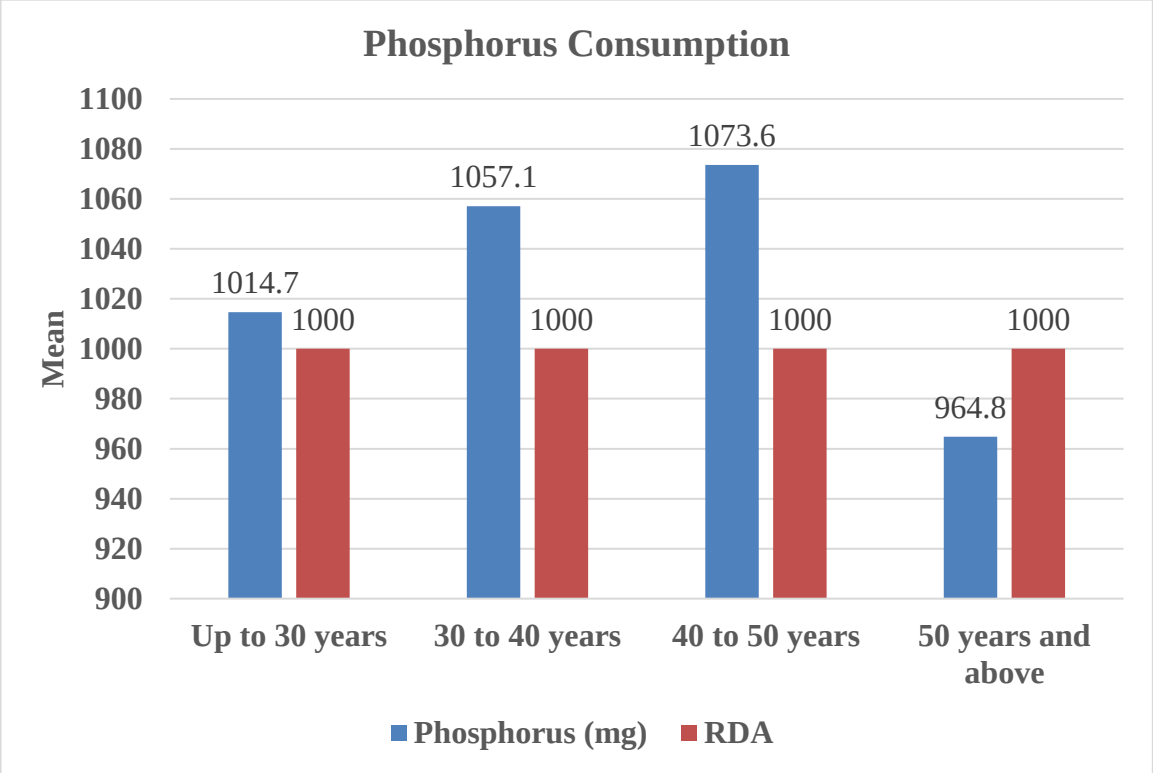

Table 4.4.6: Phosphorus intake of respondents as compared to RDA.

Table 4.4.7: Selenium intake of respondents as compared to RDA.

Age group	Selenium (µg)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	22.3	15.3	40	40.5
30 to 40 years	51.0	21.8	21.3		
40 to 50 years	25.0	23.4	18.3		
50 years and above	4.0	23.8	27.7		
Total	100.0	23.7	20.0		
Correlation coefficient (r)	0.2179*			P<0.05	

Table 4.4.7: Shows the selenium intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of the respondents belonged to age group up to 30 years have taken average selenium 22.3 µg with standard deviation 15.3 µg whereas those age group 30 to 40 years representing 51.0 percent of the respondents have taken average selenium 21.8 µg with standard deviation 21.3 µg. Taxi drivers belonged to the age group of 40 to 50 years constituting 25.0 percent of the taxi drivers have taken average selenium 23.4 µg with standard deviation 18.3 µg and only 4.0 percent of respondents belonged to the age group 50 years and above have taken average selenium 23.8 µg with standard deviation 27.7 µg. The total average intake of selenium were 23.7 µg found to be 40.5 percent deficient from RDA with standard deviation 20.0 µg. The observed value of correlation coefficient between age and selenium intake was (0.2179*) significant at 5 percent level of significance. Selenium consumption of taxi drivers were found approximately 50.0 % low because majority of the respondents were not consuming seafoods, organ meat, brazil nuts, beef, fish, meat and poultry etc. in their diet.

Table 4.4.8: Zinc intake of respondents as compared to RDA.

Age group	Zinc (mg)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	8.6	1.8	17	52.9
30 to 40 years	51.0	8.2	1.7		
40 to 50 years	25.0	7.2	1.5		
50 years and above	4.0	8.9	0.7		
Total	100.0	8.0	1.7		
Correlation coefficient (r)	0.1967*			P<0.05	

Table 4.4.8: The table shows the zinc intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of the respondents belonged to age group up to 30 years have taken average zinc 8.6 mg with standard deviation 1.8 mg whereas those age group 30 to 40 years representing 51.0 percent of the respondents have taken average zinc 8.2 mg with standard deviation 1.7 mg. Taxi drivers belonged to the age group of 40 to 50 years constituting 25.0 percent of the taxi drivers have taken average zinc 7.2 mg with standard deviation 1.5 mg and only 4.0 percent of respondents belonged to the age group 50 years and above have taken average zinc 8.9 mg with standard deviation 0.7 mg. The total average intake of zinc were 8.0 mg found to be 52.9 percent deficient from RDA with standard deviation 1.7 mg. The observed value of correlation coefficient between age and zinc intake was (0.1967*) significant at 5 percent level of significance. Zinc is an essential antioxidants and helps our immune system and metabolism functioning. It is naturally present in some foods like beans, meat, fish, grapefruits and oysters etc. and low intake of zinc confirmed the taxi drivers were not including these food products in their diet.

Appiah *et al.* (2018) studied on dietary intake of car drivers and found that zinc and water intake were above the recommended dietary intake for the German Nutrition Society. While current study shows the average intake of zinc were deficit from RDA.

Table 4.4.9: Iron intake of respondents as compared to RDA.

Age group	Iron (mg)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	15.3	2.5	19	16.8
30 to 40 years	51.0	16.2	2.5		
40 to 50 years	25.0	15.3	2.2		
50 years and above	4.0	16.5	2.4		
Total	100.0	15.8	2.5		
Correlation coefficient (r)	0.1128			P>0.05	

Table 4.4.9: Shows the iron intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), Up to 30 years age group 20.0 percent of the respondents have taken average iron 15.3 mg with standard deviation 2.5 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have taken average iron 16.2 mg with standard deviation 2.5 mg in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have taken average iron 15.3 mg with standard deviation 2.2 mg while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average iron 16.5 mg with standard deviation 2.4 mg in the study area. Total average iron have taken by respondents 15.8 mg which was found to be 15.8 percent deficient from RDA with standard deviation 2.5 mg. The value of correlation coefficient between age and iron intake was (0.1128) significant at 5 percent level of significance. It was observed that majority of the respondents were

not taking iron rich foods like green leafy vegetables, dried fruits, tofu and brown rice etc.

Thomas *et al.* (2019) examined in association of paraga consumption and dietary lifestyle on nutritional status of commercial drivers, found that 80.8% of drivers were having excess intake of iron as compared to the RDA. While in the current study iron intake by taxi drivers were found to be deficit from RDA.

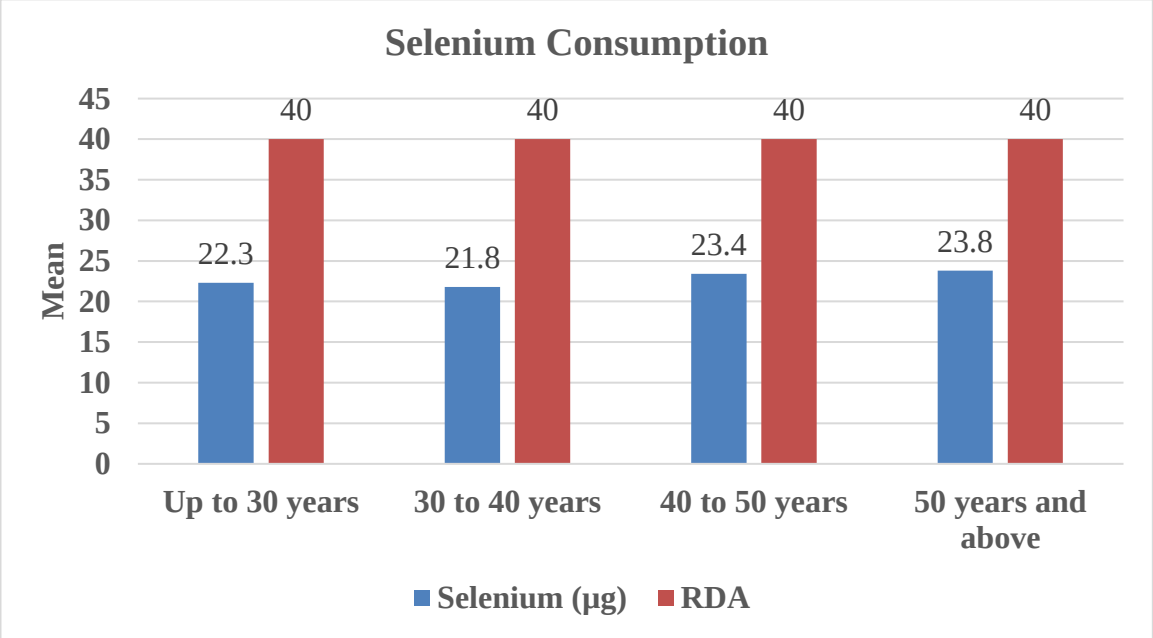

Table 4.4.7: Selenium intake of respondents as compared to RDA.

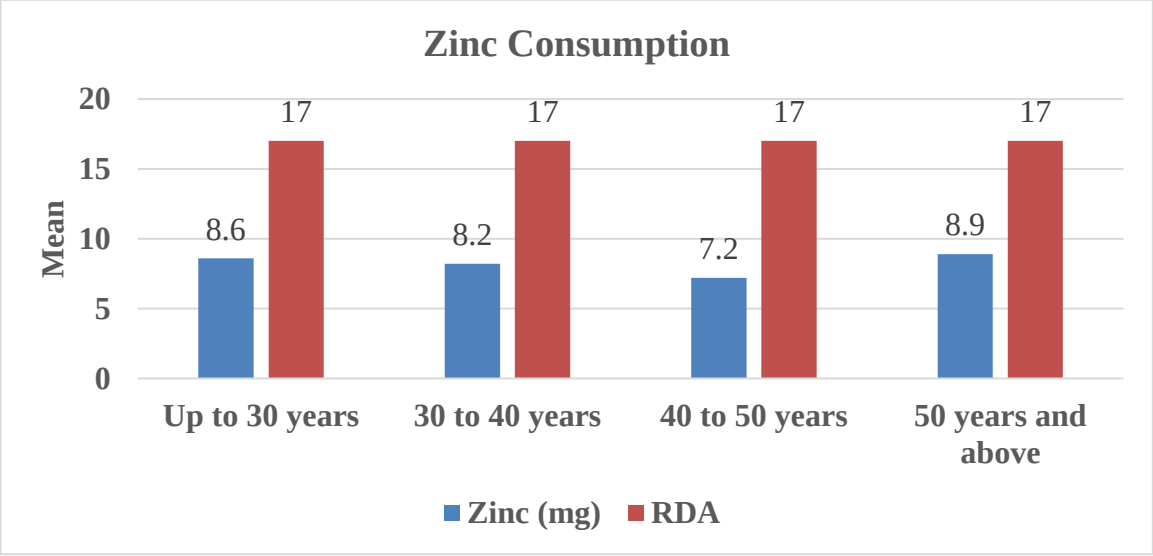

Table 4.4.8: Zinc intake of respondents as compared to RDA.

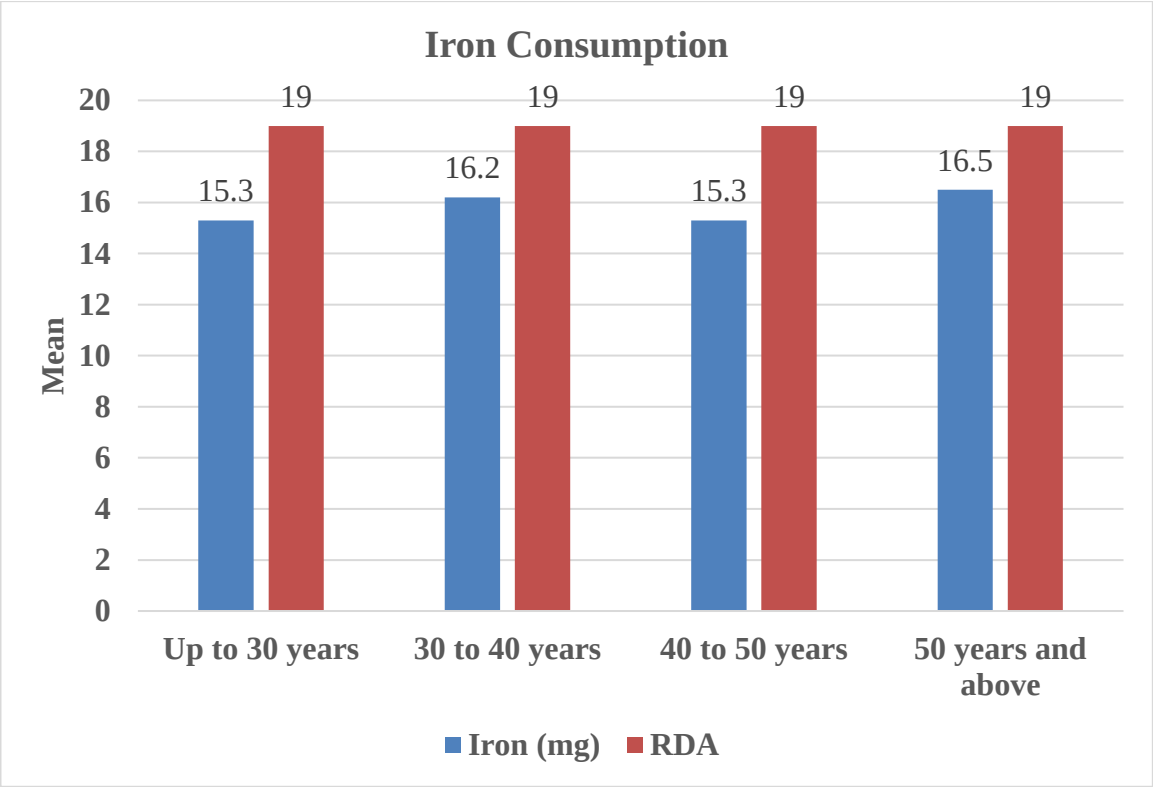

Table 4.4.9: Iron intake of respondents as compared to RDA.

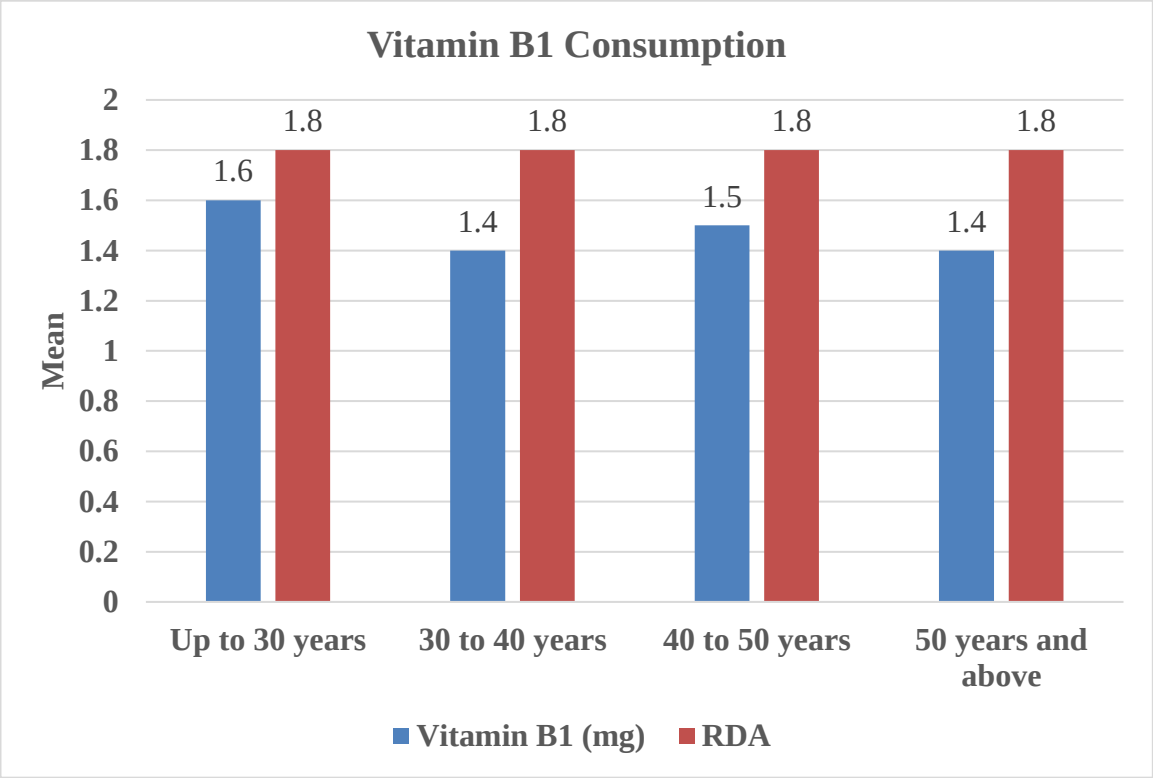

Table 4.4.10: Vitamin B1 intake of respondents as compared to RDA.

Table 4.4.10: Vitamin B1 intake of respondents as compared to RDA.

Age group	B1 (mg)				
	Percent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	1.6	0.9	1.8	11.1
30 to 40 years	51.0	1.4	1.0		
40 to 50 years	25.0	1.5	1.1		
50 years and above	4.0	1.4	1.0		
Total	100.0	1.6	1.0		
Correlation coefficient (r)	0.2021*			P<0.05	

Table 4.4.10: Shows the vitamin B1 intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), Up to 30 years age group 20.0 percent of the respondents have average vitamin B1 intake 1.6 mg with standard deviation 0.9 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have average vitamin B1 intake 1.4 mg with standard deviation 1.0 mg in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have vitamin B1 intake 1.5 mg with standard deviation 1.1 mg while only 4.0 percent of the respondents belonged to more than 50 years of age group have vitamin B1 intake 1.4 mg with standard deviation 1.0 mg in the study area. Total average vitamin B1 have taken by respondents 1.6 mg which was found to be 11.1 percent deficient from RDA with standard deviation 1.0 mg. The value of correlation coefficient between age and vitamin B1 intake was (0.2021*) significant at 5 percent level of significance. It observed that taxi drivers were not including sufficient quantity of vitamin B1 rich foods such as whole grain, meat, fish, legumes and pork etc. in their daily diet.

Oyesanya *et al.* (2023) stated the inadequate vitamin B1 were found in 66.7 percent of commercial drivers which causes fatigue, irritability, headache, nausea and stomach discomfort.

Table 4.4.11: Vitamin B2 intake of respondents as compared to RDA.

Age group	B2 (mg)				
	Per cent	Mean	S.D.	RDA	Deficit percent
Up to 30 years	20.0	1.6	0.9	2.5	40.0
30 to 40 years	51.0	1.3	1.0		
40 to 50 years	25.0	1.5	1.2		
50 years and above	4.0	2.3	0.6		
Total	100.0	1.5	1.0		
Correlation coefficient (r)	0.1987*			P<0.05	

Table 4.4.11: This table shows the vitamin B2 intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), Up to 30 years age group 20.0 percent of the respondents have vitamin B2 intake 1.6 mg with standard deviation 0.9 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have vitamin B2 intake 1.3 mg with standard deviation 1.0 mg in the research study area. 25.0 percent of respondents belonged to age group 40 to 50 years were found to be average intake of vitamin B2 was 1.5 mg with standard deviation 1.2 mg while only 4.0 percent of the respondents belonged to above 50 years of age group have average vitamin B2 intake 2.3 mg with standard deviation 0.6 mg in the study area of Kanpur City. Total average vitamin B2 have taken by respondents 1.5 mg which was found to be 40.0 percent deficient from RDA with standard deviation 1.0 mg. The observed value of correlation coefficient between age and vitamin B2 intake was (0.1987*) significant at 5 percent level of significance. Riboflavin

deficiency indicates the taxi drivers were not consuming whole grain, milk, organ meats, avocados, almonds and green leafy vegetables etc.

Table 4.4.12: Vitamin B3 intake of respondents as compared to RDA.

Age group	B3 (mg)				
	Percent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	16.2	2.0	18	13.9
30 to 40 years	51.0	15.3	2.5		
40 to 50 years	25.0	15.5	2.3		
50 years and above	4.0	15.6	3.0		
Total	100.0	15.5	2.4		
Correlation coefficient (r)	0.1202			P>0.05	

Table 4.4.12: Shows the vitamin B3 intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers belonged to the age group up to 30 years were found to be vitamin B3 deficit with average intake 16.2 mg and standard deviation of 2.0 mg followed by 51.0 percent of respondents in the age group 30 to 40 years expressed as a vitamin B3 deficit with average intake 15.3 mg and standard deviation 2.5 mg in the study area. 25.0 percent of taxi drivers in the 40 to 50 years age group were found to be vitamin B3 deficit with average intake 15.5 mg and standard deviation 2.3 mg. While 4.0 percent of respondents have taken 15.6 mg with standard deviation 3.0 mg of vitamin B3. Total average vitamin B3 have taken by respondents 15.5 mg which was 13.9 percent deficit from RDA with standard deviation 2.4 mg. It observed that majority of respondents were not consuming niacin rich foods such as fish, beef, salmon, liver, avocados, peanuts and chicken in daily diet. Maximum of the respondents had Vitamin B3 deficiency due to their vegetarian food habits. Niacin deficiency can result in symptoms like skin rashes, diarrhoea, memory loss etc.

The observed value of correlation coefficient between age and vitamin B3 intake was (0.1202) significant at 5 percent level of significance.

Thomas *et al.* (2019) revealed 39.1 percent of commercial drivers were having excess intake of vitamin B3 as compared to RDA. While current study shows that inadequate vitamin B3 consumed by taxi drivers.

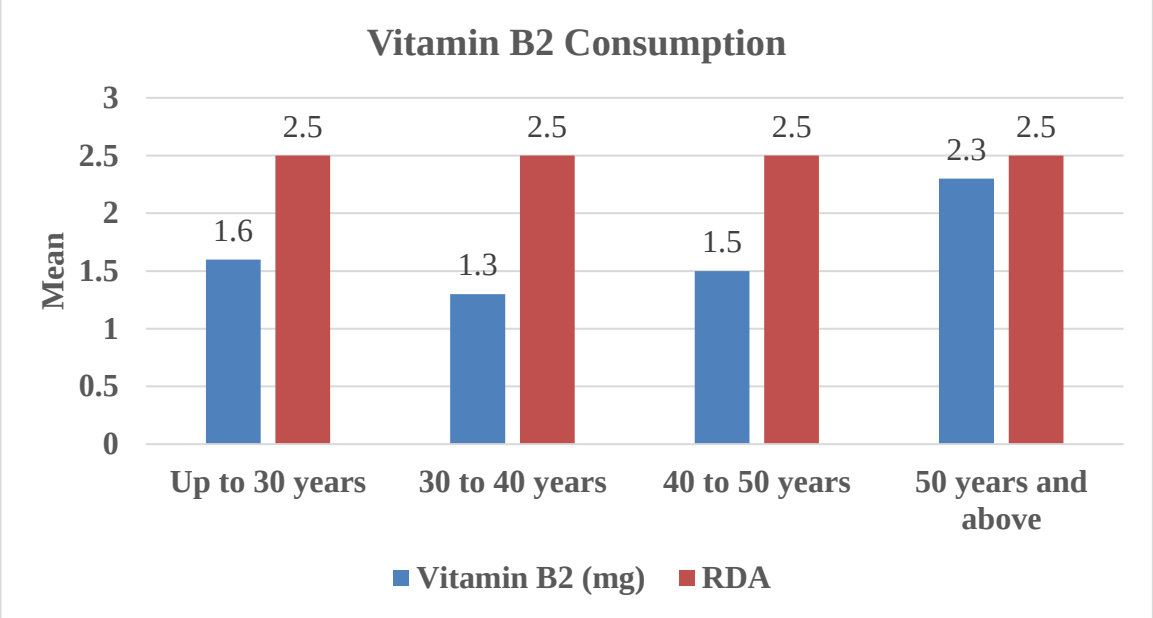

Table 4.4.11: Vitamin B2 intake of respondents as compared to RDA.

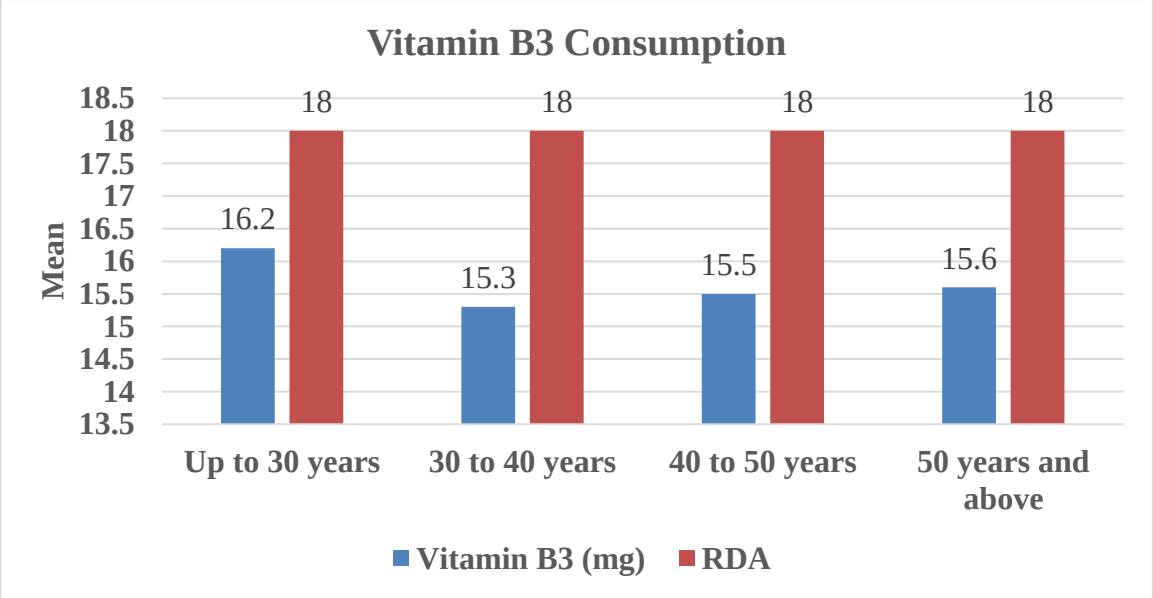

Table 4.4.12: Vitamin B3 intake of respondents as compared to RDA.

Table 4.4.13: Vitamin B9 intake of respondents as compared to RDA.

Age group	Vitamin B9 (µg)				
	Percent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	264.5	81.1	300	11.6
30 to 40 years	51.0	269.6	75.4		
40 to 50 years	25.0	256.3	84.0		
50 years and above	4.0	269.1	49.7		
Total	100.0	265.2	77.1		
Correlation coefficient (r)	0.1123			P>0.05	

Table 4.4.13: Reveals the vitamin B9 intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers belonged to the age group up to 30 years were found to be vitamin B9 deficit with average intake 264.5 µg and standard deviation of 81.1 µg followed by 51.0 percent of respondents in the age group 30 to 40 years expressed as a vitamin B9 deficit with average intake 269.6 µg and standard deviation 75.4 µg in the study area. 25.0 percent of taxi drivers in the 40 to 50 years age group were found to be vitamin B9 deficit with average intake 256.3 µg and standard deviation 84.0 µg. While 4.0 percent of respondents have taken 269.1 µg with standard deviation 49.7 µg of vitamin B9. Total average intake of vitamin B9 were found to be 265.2 µg which was 11.6 percent deficit from RDA with standard deviation 77.1 µg. The observed value of correlation coefficient between age and vitamin B9 intake was (0.1123) significant at 5 percent level of significance.

Folate is important in red blood cell formation and healthy cell growth and function and helps our body making new cells for example brain cell, skin, hair and nails. Vitamin B9 deficiency indicates that taxi drivers were not taking green leafy vegetables, fortified grains, citrus fruits etc.

Table 4.4.14: Vitamin B12 intake of respondents as compared to RDA.

Age group	B12 (µg)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	1.5	1.2	2.5	52.0
30 to 40 years	51.0	1.3	1.1		
40 to 50 years	25.0	1.0	1.0		
50 years and above	4.0	0.4	0.3		
Total	100.0	1.2	1.1		
Correlation coefficient (r)	-0.1243			P>0.05	

Table 4.4.14: Shows the vitamin B12 intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers were found to be deficit of vitamin B12 up to 30 years of age group with mean score 1.5 µg and standard deviation 1.2 µg whereas 51.0 percent of respondents were found to be deficit in the age group 30 to 40 years with average intake 1.3 µg and standard deviation 1.1 µg in the study area. In the age group 40 to 50 years 25.0 percent of taxi drivers were found to be deficit of vitamin B12 intake with mean score 1.0 µg and standard deviation 1.0 µg while only 4.0 percent of respondents belonged to the above 50 years age group had average intake 0.4 µg with standard deviation 0.3 µg. The total mean score of vitamin B12 have taken by respondents 1.2 which was found to be 52.0 percent deficit from RDA and standard deviation 1.1 µg. The observed value of correlation coefficient between age and vitamin B12 was (-0.1243) significant at 5 percent level of significance and negatively correlated with age. It was observed that respondents were not taking vitamin B12 rich foods in their diet such as egg, fish, chicken and dairy products.

Oyesanya *et al.* (2023) revealed the 60.7 percent of drivers were having excess average intake of vitamin B12 as compared to RDA while current study shows deficient of vitamin B12 intake by taxi drivers as compared to RDA.

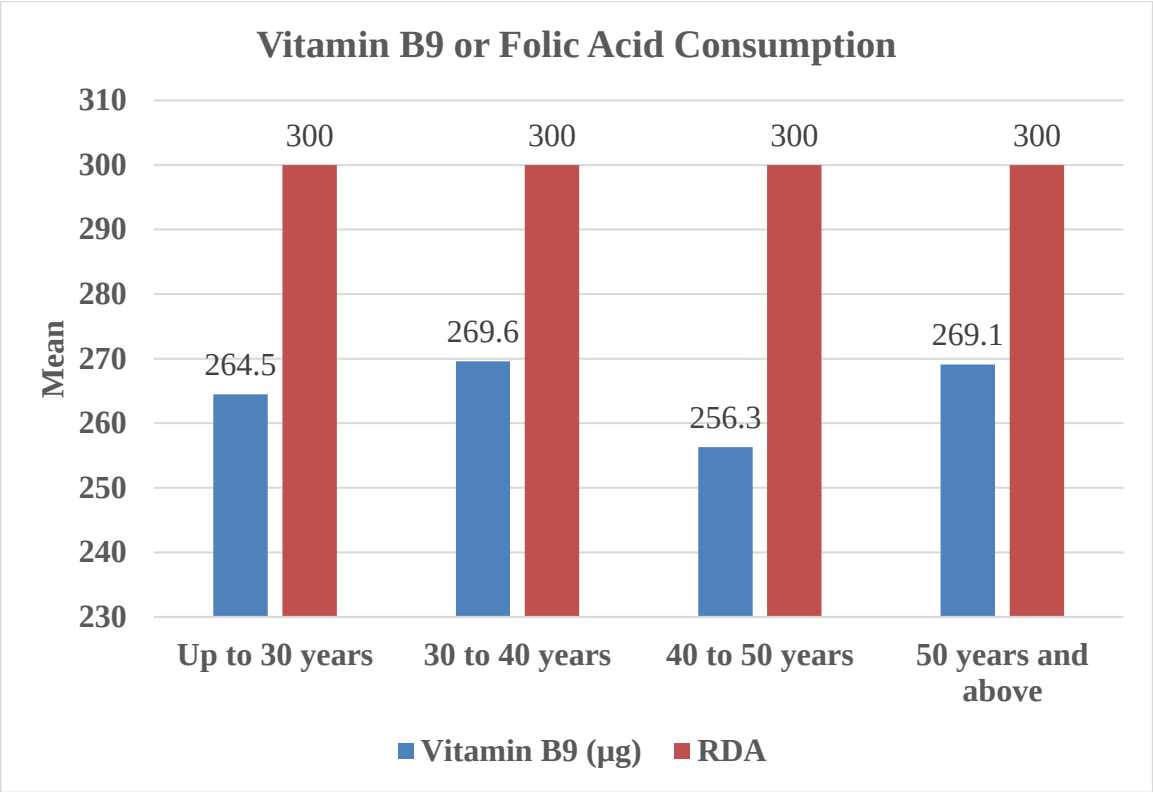

Table 4.4.13: Vitamin B9 intake of respondents as compared to RDA.

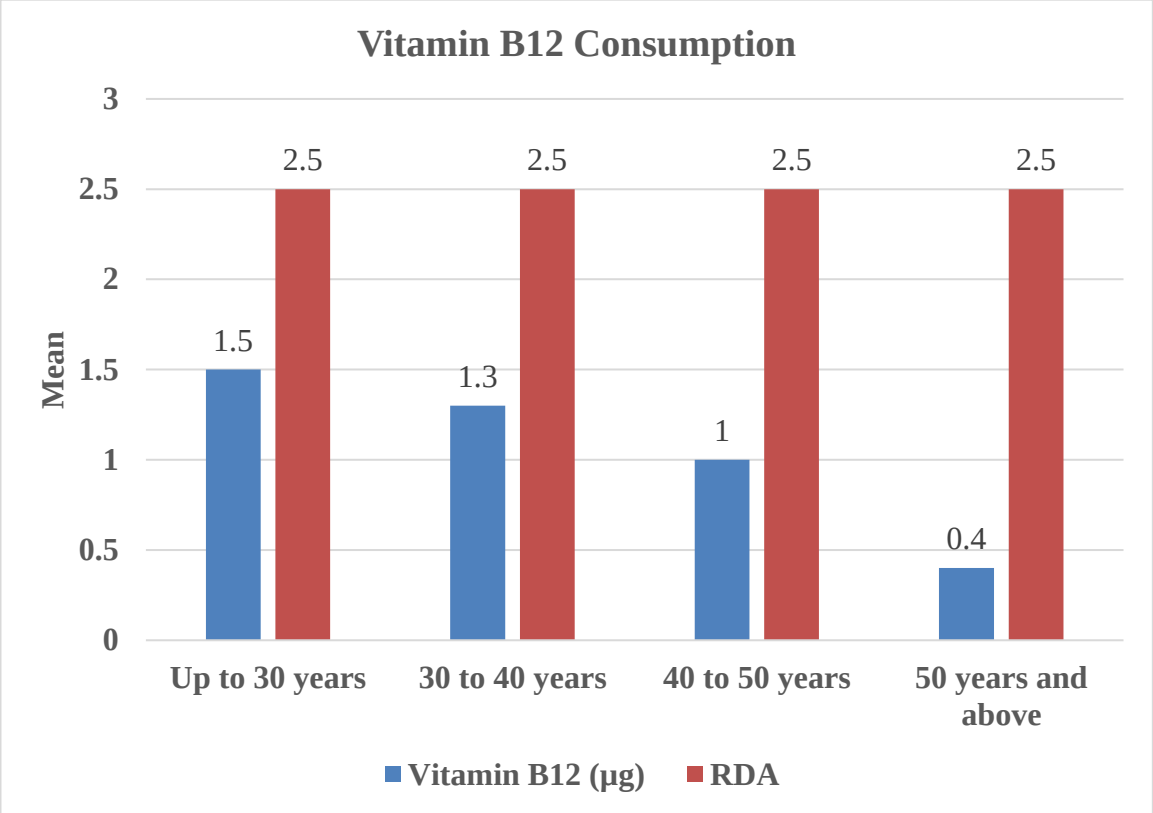

Table 4.4.14: Vitamin B12 intake of respondents as compared to RDA.

Table 4.4.15: Vitamin A intake of respondents as compared to RDA.

Age group	Vitamin A (µg)				
	Percent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	466.6	129.2	1000	54.2
30 to 40 years	51.0	470.1	163.8		
40 to 50 years	25.0	435.9	160.5		
50 years and above	4.0	412.5	168.1		
Total	100.0	458.5	155.4		
Correlation coefficient (r)	0.1987*			P<0.05	

Table 4.4.15: Reveals the vitamin A intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers were found to be deficit of vitamin A up to 30 years of age group with mean score 466.6 µg and standard deviation 129.2 µg whereas 51.0 percent of respondents were found to be deficit in the age group 30 to 40 years with average intake 470.1 µg and standard deviation 163.8 µg in the study area. In the age group 40 to 50 years 25.0 percent of taxi drivers were found to be deficit of vitamin A intake with mean score 435.9 µg and standard deviation 160.5 µg while only 4.0 percent of respondents belonged to the above 50 years age group had average intake 412.5 µg with standard deviation 168.1 µg. The total mean score of vitamin A have taken by respondents 458.5 µg which was found to be 54.2 percent deficit from RDA because majority of the respondents were not including spinach, broccoli, kale, carotene and fiber rich food in their diet with standard deviation 155.4 µg. The observed value of correlation coefficient between age and vitamin A was (0.1987*) significant at 5 percent level of significance.

Table 4.4.16: Vitamin C intake of taxi drivers as compared to RDA.

Age group	Vitamin C (mg)				
	Per cent	**Mean**	**S.D.**	**RDA**	**Deficit percent**
Up to 30 years	20.0	29.4	17.4	80	58.5
30 to 40 years	51.0	38.3	28.0		
40 to 50 years	25.0	25.1	13.6		
50 years and above	4.0	36.8	6.1		
Total	100.0	33.2	23.0		
Correlation coefficient (r)	-0.1163			P>0.05	

Table 4.4.16: Reveals the vitamin C intake of taxi drivers as compared to the Recommended Dietary Allowance (RDA), 20.0 percent of taxi drivers were found to be deficit of vitamin C up to 30 years of age group with mean score 29.4 mg and standard deviation 17.4 mg whereas 51.0 percent of respondents were found to be deficit in the age group 30 to 40 years with average intake 38.3 mg and standard deviation 28.0 mg in the study area. In the age group 40 to 50 years 25.0 percent of taxi drivers were found to be deficit of vitamin C intake with mean score 25.1 mg and standard deviation 13.6 mg while only 4.0 percent of respondents belonged to the above 50 years age group had average vitamin C intake 36.8 mg with standard deviation 6.1 mg. The total mean score of vitamin C was found to be 58.5 percent deficit as compared to RDA and standard deviation 23.0 mg. The value of correlation coefficient between age and vitamin C was (-0.1163) significant at 5 percent level of significance negatively correlated with each other. Majority of the respondents were not including vitamin C rich foods in diet.

Vitamin C is a antioxidants that is play important role in production of bones, cartilage, skin, and blood vessels and functioning of immune system. Early symptoms of vitamin C deficiency may include malaise, fatigue, and swollen

gums. Citrus fruits such as oranges, guava, kiwi, papaya, and tomato may prevent vitamin C deficiency.

Oyesanya *et al.* (2023) revealed 4.3 percent of drivers have taken inadequate vitamin C as compared to RDA and 40.3% were malnourished and there is substantial inadequate micronutrient intake among the respondents.

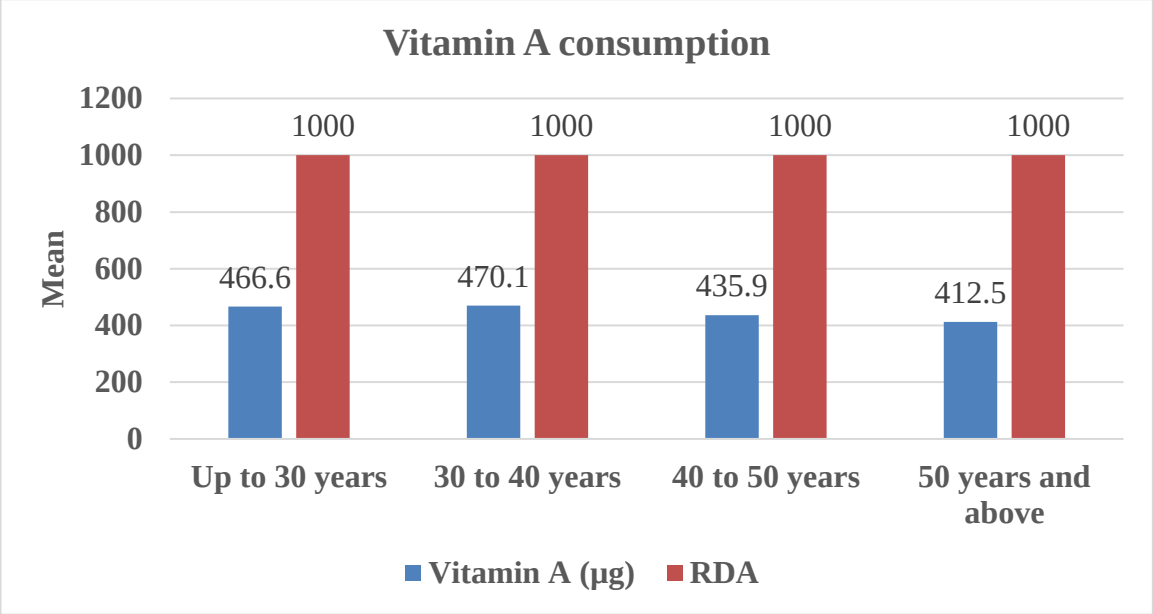

Table 4.4.15: Vitamin A intake of respondents as compared to RDA.

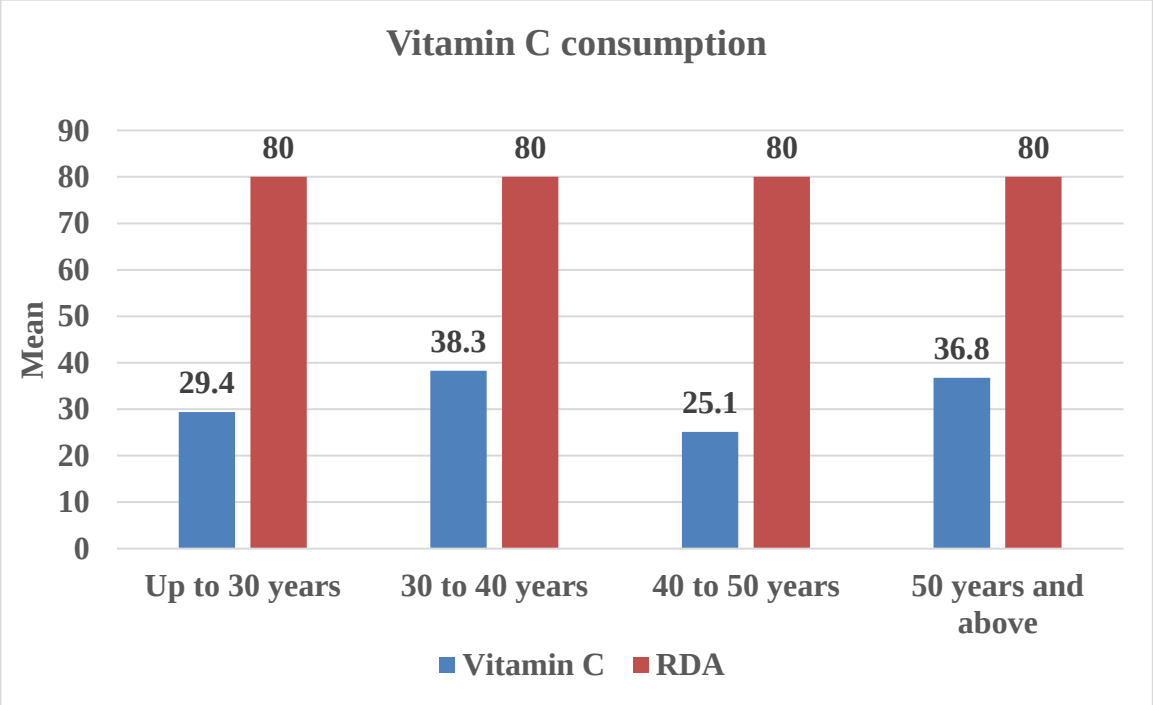

Table 4.4.16: Vitamin C intake of taxi drivers as compared to RDA.

Table 4.4.17: Correlation coefficient of nutrients intake and independents variables.

S. No.	Nutrients	Correlation coefficient		
		Education	**Family size**	**Income**
1.	**Energy (Kcal)**	0.1273	0.1996*	0.1997*
2.	**CHO (gm)**	-0.1764	0.1990*	0.1076
3.	**Protein (gm)**	0.2369*	-0.1090	0.2828*
4.	**Fat (gm)**	0.1623	0.0125	0.0148
5.	**Calcium (mg)**	0.2133*	-0.0461	0.2193*
6.	**Phosphorus (mg)**	0.0307	0.0306	0.1008
7.	**Selenium (µg)**	-0.0643	-0.0819	0.0401
8.	**Zn (mg)**	0.0214	0.0327	0.1002
9.	**Fe (mg)**	0.2124*	-0.0713	0.2232*
10.	**B1 (mg)**	0.0567	0.0311	0.1345
11.	**B2 (mg)**	0.0320	0.2536*	0.0205
12.	**B3 (mg)**	0.0115	0.0894	0.0231
13.	**B9 (µg)**	0.0509	-0.0024	0.0630
14.	**B12 (µg)**	0.1584	0.1009	0.2431*
15.	**Vitamin A (µg)**	0.2146*	0.1159	0.2023*
16.	**Vitamin C (mg)**	0.2460*	0.2044*	0.2768*

Table 4.4.17: Reveals the correlation coefficients between nutrients intake and independent variables of the taxi drivers, Education of the taxi drivers were found to be significantly correlated with protein, calcium, iron, vitamin A and vitamin C at 5 % level of significance, hence as per education of the taxi drivers they were aware with these nutrients intake. Education of the taxi drivers plays non-significant role with energy, fat, phosphorus, zinc, vitamin B1, vitamin B2, Vitamin B9 and vitamin B12. Hence they were not fully aware with these nutrients

at 5% level of significance in the study area. Education of the taxi drivers were found to be negatively correlated with CHO and selenium at 5 % level of significance. As per family size of the taxi drivers were found significantly correlated with energy, CHO, vitamin B2 and vitamin C and fat, phosphorus, zinc, vitamin B1, B3, B12, vitamin A were found to be non- significant at 5 % level of significance while protein, calcium, selenium, iron and vitamin B9 were found to be negatively correlated with family size of the respondents. Furthermore, On the basis of income were found to be significantly correlated with energy, protein, calcium, iron, vitamin B12, vitamin A and vitamin C at 5 % level of significance and CHO, fat, phosphorus, selenium, zinc, vitamin B1, vitamin B1, vitamin B2, vitamin B3 and vitamin B9 were found to be non-significant at 5 percent level of significance.

4.5 Dietary pattern

Table 4.5: Dietary intake of the respondents on the basis of food group.

S. No.	Food group	<1 per week	3-4 per week	Once a day	Twice a day	Thrice a day	Mean Score	Rank
1.	**Cereals**	12.0	6.0	21.0	48.0	13.0	3.44	I
2.	**Fatty food**	10.0	22.0	45.0	22.0	1.0	2.82	II
3.	**Sugar, Jaggery & products**	31.0	29.0	36.0	4.0	0.0	2.13	VI
4.	**Non-veg and Egg**	37.0	43.0	10.0	10.0	0.0	1.93	VIII
5.	**Milk & Milk products**	40.0	38.0	22.0	0.0	0.0	1.82	X
6.	**Pulses & Legumes**	31.0	29.0	29.0	11.0	0.0	2.20	III

7.	**Fruits & Fruit juice**	39.0	44.0	14.0	3.0	0.0	1.81	XI
8.	**Vegetable**	38.0	16.0	39.0	7.0	0.0	2.15	V
a)	**Green leafy vegetables**	40.0	34.0	34.0	2.0	0.0	2.18	IV
b)	**Other vegetables**	34.0	36.0	25.0	5.0	0.0	2.01	VII
c)	**Roots & tubers**	50.0	27.0	12.0	11.0	0.0	1.84	IX

Table 4.5: Reveals the average dietary intake of the respondents on the basis of food group, 13.0 percent of respondents have taken cereals thrice a day, 48.0 percent of respondents have taken twice a day and 21.0 percent have taken once a day followed by 6.0 percent have taken 3 to 4 time a week while 12.0 percent of respondents have taken less than once a week with mean score 3.44 and rank I. 1.0 percent of respondents were consuming fatty foods thrice a day, 22.0 percent were consuming twice a day, 45.0 percent of respondents have taken once a day and 22.0 percent have taken 3-4 times a week while 10.0 percent have taken less than once a week with mean score 2.82 and rank II. As though pulses and legumes were consumed by 11.0 percent of respondents twice a day, 29.0 percent have taken once a day, 29.0 percent 3-4 times a week while 31.0 percent less than once a week with mean score 2.20 and rank III. Green leafy vegetables were consumed by 2.0 percent of respondents twice a day, 34.0 percent of respondents have taken once a day, 34.0 percent of respondents have taken 3-4 times in a week and 40.0 percent have taken less than once a week with mean score 2.18 and rank IV. However, 7.0 percent of respondents have taken twice a day, 39.0 percent of respondents have taken once a day, 16.0 percent of respondents have taken 3-4 times in a week and 38.0 percent have taken vegetables less than once a week with mean score 2.15 and rank V followed by 4.0 percent of respondents were consuming twice a day, 36.0 percent have taken once a day, 29.0 percent were

consuming 3-4 times in a week while 31.0 percent were consuming less than once a week with mean score 2.13 and rank VI. Other vegetables were consumed by 5.0 percent of respondents twice a day, 25.0 percent of respondents have taken once a day, 36.0 percent of respondents have taken 3-4 times in a week and 34.0 percent have taken less than once a week with mean score 2.01 and rank VII, whereas 10.0 percent were consuming twice a day, 10.0 percent of respondents have taken once a day and 43.0 percent have taken 3-4 times a week while 37.0 percent have taken non-veg and egg less than once a week with mean score 1.93 and rank VIII. As though roots and tubers were consumed by 11.0 percent of respondents twice a day, 12.0 percent have taken once a day, 27.0 percent 3-4 times a week while 50.0 percent less than once a week with mean score 1.84 and rank IX followed by milk and milk products were consumed by 0.0 percent of respondents twice a day, 22.0 percent of respondents have taken once a day, 38.0 percent of respondents have taken 3-4 times a week and 40.0 percent have taken less than once a week with mean score 1.82 and rank X. At the last 3.0 percent of respondents have taken fruits and fruit juice twice a day, 14.0 percent were consumed by respondents once a day and 44.0 percent have taken 3-4 times a week while 39.0 percent of respondents were consuming less than once a week with mean score 1.81 and rank XI in the study area.

Sheena *et al.* (2023) examined the low rates of fruit and vegetable consumption and physical activity (PA) associated with stress levels positively predicting sleep disturbances and negatively predicting smoking. Sugar consumption was associated with smoking, but other health behaviours showed no significant relationships.

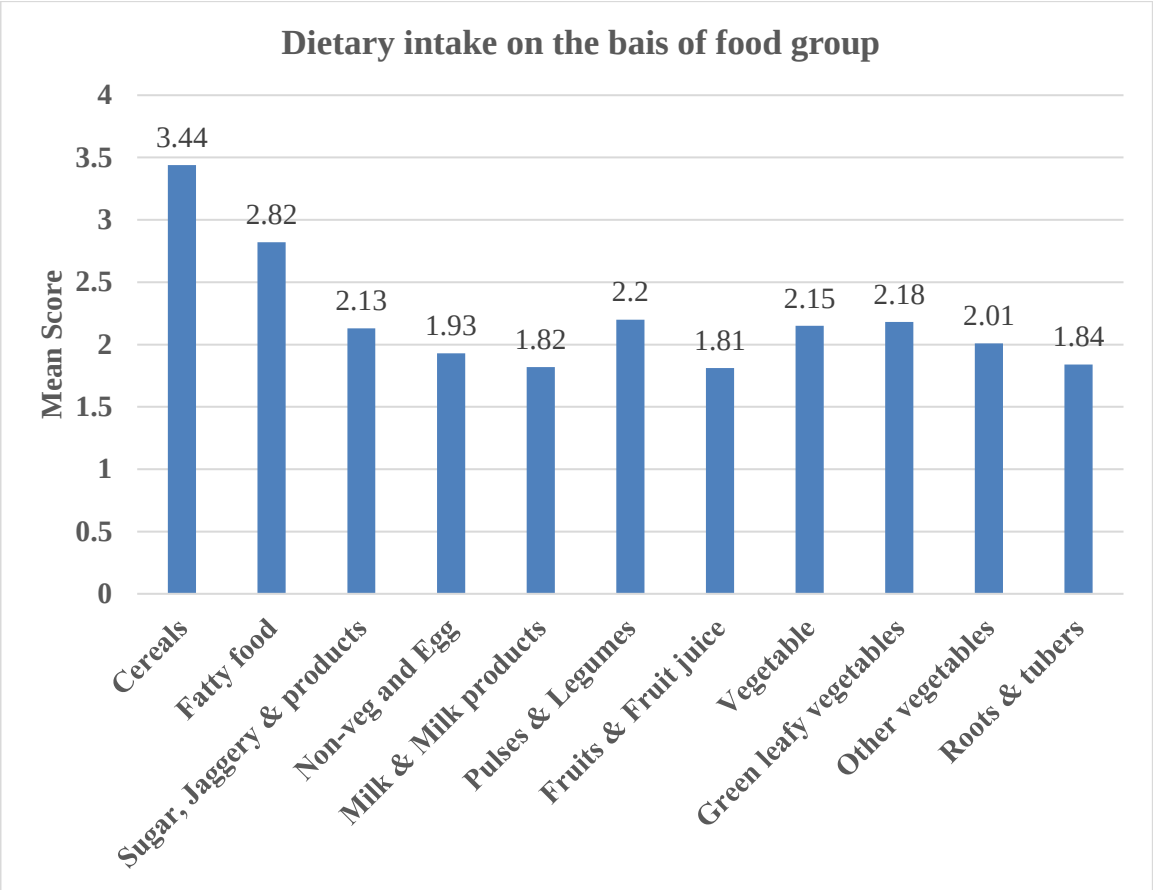

Table 4.5: Dietary intake of the respondents on the basis of food group.

4.6 Food Habits of Taxi Drivers

Table 4.6.1: Distribution of respondents on the basis of taken breakfast.

Eat breakfast	Frequency	Per cent
Every day	22	22.0
Occasionally	35	35.0
Rarely	28	28.0
Never	15	15.0

Table 4.6.1: Shows the distribution of taxi drivers on the basis of breakfast intake, 35.0 percent of respondents were consuming breakfast occasionally, 28.0 percent were consuming rarely, and 22,0 percent were consuming every day while only 15.0 percent were consuming never in the study area of Kanpur City.

Table 4.6.2: Distribution of respondents on the basis of preferred breakfast choice.

Preferred breakfast choice	Frequency	Per cent
Cereals/ granola	29	29.0
Eggs/ toast	27	27.0
Pastries/ doughnuts	26	26.0
Other	18	18.0

Table 4.6.2: Reveals the distribution of taxi drivers based on preferred breakfast choice, 29.0percent of the respondents were eating cereals/granola, 27.0percent were eating eggs/ toast and 26.0percent were eating pastries/doughnuts, while only 18.0percent were eating other breakfast in the study area of Kanpur.

Table 4.6.3: Distribution of respondents on the basis of primary dietary preference

Primary dietary preference	Frequency	Per cent
Omnivore (Eats both meat and plant-based foods)	42	42.0
Vegetarian (Avoids all animal products)	24	24.0
Pescatarian (Avoids meat but eats fish and other seafood)	27	27.0
Other	5	5.0

Table 4.6.3: The data shows in the above table depicts the primary dietary preference of respondents, maximum 42.0 percent of respondents were found omnivore who consume meat and plant-based foods, 27.0 percent were found pescatarian who avoid meat but eat fish and other seafoods and 24.0 percent of

respondents were found vegetarian who avoid all animal products whereas only 5.0 percent belonged to the other dietary preference.

Table 4.6.4: Distribution of respondents on the basis of specific dietary restrictions or allergies.

Specific dietary restrictions	Frequency	Per cent
Yes	26	26.0
No	74	74.0

Table 4.6.4: Shows the distribution of respondents on the basis of specific dietary restrictions, 74.0 percent of taxi drivers were not having any type of dietary restriction while 26.0 percent of taxi drivers were having specific dietary restriction in the study area of Kanpur City.

Table 4.6.5: Distribution of respondents on the basis of consumption of snacks in a day.

Consume snacks throughout the day	Frequency	Percent
Multiple times a day	34	20.0
Once a day	20	34.0
Several times a week	27	27.0
Rarely	12	12.0
Never	7	7.0

Table 4.6.5: Shows the distribution of taxi drivers on the basis of consumption of snacks in a day, 34.0 percent of taxi drivers were consuming snacks multiple time in a day followed by 27.0 percent have taken several time in a week, 20.0 percent

have taken once a day and 12.0 percent have taken rarely while 7.0 percent of the taxi drivers never consumed snacks in the study area of Kanpur City.

Table 4.6.6: Distribution of respondents on the basis of knowledge about nutrition and healthy eating.

Overall knowledge about nutrition and healthy eating	Frequency	Percent
Very knowledgeable	11	11.0
Moderately knowledgeable	34	34.0
Somewhat knowledgeable	22	22.0
Not very knowledgeable	23	23.0
Not knowledgeable at all	10	10.0

Table 4.6.6: Reveals the overall knowledge about nutrition and healthy eating of taxi drivers, 34.0 percent of taxi drivers were having moderate knowledge about nutrition and healthy eating, 23.0 percent of taxi drivers were not having very knowledge about nutrition and healthy eating, 22.0 percent of taxi drivers were having somewhat knowledge about nutrition and healthy eating and 11.0 percent of taxi drivers were having very knowledge about nutrition and healthy eating while 10.0 percent of taxi drivers were not having knowledge about nutrition and healthy eating in the study area.

Table 4.6.7: Distribution of respondents on the basis of millet intake.

Take millets and millets product in diet	Frequency	Percent
Once a day	15	15.0
Twice a week	40	40.0
Twice a month	45	45.0

Table 4.6.7: Perusal of the table reveals the distribution of respondents on the basis of millet intake, 45.0 percent of taxi drivers have taken millets and millets products twice a month, 40.0 percent of taxi drivers have taken millets and millets products twice a week while 15.0 percent of taxi drivers have taken millets and millets products once a day in the study area.

Table 4.6.8: Distribution of respondents on the basis of taken meal during working shift.

Eat meals during working shift	Frequency	Per cent
Never	11	11.0
Occasionally	28	28.0
Once a day	24	24.0
Twice a day	31	31.0
More than twice a day	6	6.0

Table 4.6.8: Shows the distribution of respondents on the basis of taken meal during working shift, 31.0 percent of taxi drivers have taken meal twice a day during working shift followed by 28.0 percent have taken meal occasionally during working shift, 24.0 percent have taken meal once a day and 11.0 percent of taxi drivers have never taken meal during working shift while 6.0 percent of taxi drivers have taken meal more than twice a day during working shift in the Kanpur City.

Shrestha *et al.* (2017) revealed the irregular work schedule of taxi drivers disrupts their eating patterns, often resulting in skipped meals or irregular timing of meals. The irregular eating patterns can adversely affect metabolic health and contribute to weight gain and metabolic syndrome.

Table 4.6.9: Distribution of respondents on the basis of place choice for taken meals.

Usually eat during working shift	Frequency	Percent
Restaurants	15	15.0
Fast food joints	27	27.0
Homemade meals brought from home	26	26.0
Snacks from convenience stores	20	20.0
Other	12	12.0

Table 4.6.9: Shows the eating habits of taxi drivers during their working shifts, 27.0 percent of taxi drivers were choosing the fast food joints, homemade meals brought from home were nearly as popular, chosen by 26.0 percent of taxi drivers. Snacks from convenience stores were the next most common choice, selected by 20.0 percent of taxi drivers followed by restaurants were chosen by 15.0 percent of taxi drivers and other category included 12.0 percent of taxi drivers were having different eating preferences during their working shifts.

Table 4.6.10: Distribution of respondents on the basis of money spent on food.

Income spent on food	Frequency	Percent
10 percent	15	15.0
15 percent	39	39.0
20 percent	28	28.0
30 percent	18	18.0

Table 4.6.10: Indicates the distribution of respondents on the basis of money spent on food**,** 15.0 percent of income was the most common expenditure on food by 39.0 percent of taxi drivers followed by 28.0 percent of taxi drivers were spending their income on food 20.0 percent and 30.0 percent of income were spent by 18.0

percent taxi drivers whereas 10 percent of income was the least common expenditure on food by 15.0 percent of taxi drivers in Kanpur City.

4.7 Impact on health of taxi drivers

Table 4.7: Distribution of respondents on the basis of impact on their health.

S.No.	Impact on Health		
1.	**Physical discomfort related to job as a taxi driver**	**Frequency**	**Per cent**
	Rarely	31	31.0
	Occasionally	22	22.0
	Frequently	30	30.0
	Almost daily	17	17.0
2.	**Health issues**		
	Back pain	5	5.0
	Neck pain	10	10.0
	Shoulder pain	19	19.0
	Leg pain	25	25.0
	Headaches	18	18.0
	Eye strain	9	9.0
	Respiratory problems	7	7.0
3.	**Overall impact in job as a taxi driver on mental health**		
	Very positive	6	6.0
	Positive	20	20.0
	Neutral	31	31.0
	Negative	27	27.0
	Very negative	16	16.0

4.	**Mental health issues related to job as a taxi driver**	**Frequency**	**Per cent**
	Stress	9	9.0
	Anxiety	11	11.0
	Depression	29	29.0
	Burnout	22	22.0
	Insomnia	19	19.0
	Not sure	32	32.0
5.	**Support and resources provided as a taxi driver**		
	Very satisfied	11	11.0
	Satisfied	13	13.0
	Neutral	33	33.0
	Dissatisfied	31	31.0
	Very dissatisfied	12	12.0
6.	**Overall health during the current situation**		
	Excellent	8	8.0
	Good	34	34.0
	Fair	41	41.0
	Poor	17	17.0
7.	**Changes weight or overall health**		
	Yes, gain weight	15	15.0
	Yes, loss weight	29	29.0
	No noticeable changes	38	38.0
	Not sure	18	18.0

Table 4.7: The above data illustrates the significant health impacts faced by taxi drivers due to their job, physical discomfort or pain related to the job is a common issue with 47.0 percent of taxi drivers were experiencing it frequently or almost daily, 31.0 percent reported rarely feeling pain while 22.0 percent reported occasionally by physical discomfort. Taxi drivers were suffering from specific health issues include leg pain 25.0 percent, shoulder pain 19.0 percent, headaches 18.0 percent and neck pain 10.0 percent among others like eye strain 9.0 percent, respiratory problems 7.0 percent and back pain 5.0 percent in the study area of Kanpur City. 43.0 percent reported negative or very negative impacts on mental health of a taxi drivers, 31.0 percent remain neutral while 26.0 percent of taxi drivers perceive a positive or very positive effect on their mental health. In case of mental health challenges among taxi drivers, 29.0 percent of taxi drivers affected by depression, 22.0 percent reported burnout, insomnia affects 19.0 percent of taxi drivers, anxiety and stress are also prevalent, impacting 11.0 percent and 9.0 percent of taxi drivers while 32.0 percent was unsure about their mental health status, indicating potential underreporting or lack of awareness. In terms of support and resources provided for taxi drivers, satisfaction levels are generally low, with 31.0 percent of taxi drivers dissatisfied and 12.0 percent very dissatisfied. Only 24.0 percent of taxi drivers are satisfied or very satisfied with the support provided, while 33.0 percent remain neutral. Regarding overall health, maximum 41.0 percent of taxi drivers rate their health as fair, 34.0 percent rate their health as good, while 17.0 percent considered their health poor and 8.0 percent rate it as excellent in the study area of Kanpur City. Changes in weight or overall health shows that 38.0 percent have not noticed any changes, 29.0 percent of taxi drivers have lost weight, 18.0 percent of taxi drivers are unsure about weight changes while 15.0 percent have gained weight. This data highlights different type health issues faced by taxi drivers in the form of physical, psychological and other factors.

Murray *et al.* (2019) stated that 44.0 percent of drivers reported their health as 'fair' or 'poor' and majority of drivers reported financial and job dissatisfaction.

Zhang *et al.* (2014) revealed that 54.8% of taxi drivers were reported illness in the last two weeks and 44.7% of participants were reported chronic diseases. The prevalence rates of hypertension, diabetes mellitus, gastroenteritis, arthritis, and heart disease were 18.2%, 8.8%, 26%, 18.4%, and 4.8% of taxi drivers, respectively. Significant self-reported symptoms included fatigue, waist and back pain, headache, dyspepsia, and dry throat were affecting 49.7%, 26.2%, 23.5%, 26%, and 27% of taxi drivers, respectively.

4.8: Morbidity Pattern

Table 4.8: Distribution of respondents on the basis of assessment of morbidity pattern.

S. No.	Disease	Morbidity Pattern			Mean Score	Rank
		Frequently	Occasionally	Never		
1.	Headache	31.0	51.0	18.0	2.13	III
2.	Cough and cold	17.0	64.0	19.0	1.98	V
3.	Gastric problem	37.0	47.0	16.0	2.21	II
4.	Fever	15.0	53.0	32.0	1.83	VIII
5.	Joint pain	29.0	48.0	23.0	2.06	IV
6.	Lower back pain	47.0	38.0	15.0	2.32	I
7.	Eye problem	19.0	47.0	34.0	1.85	VII
8.	Heart disease	15.0	32.0	53.0	1.62	X
9.	Fatigue	32.0	49.0	19.0	2.13	III
10.	Depression	28.0	50.0	22.0	2.06	IV
11.	Stress	34.0	45.0	21.0	2.13	III
12.	Insomnia	18.0	50.0	32.0	1.86	VI
13.	Arthritis	17.0	32.0	51.0	1.66	IX

Table 4.8: The perusal of table reveals the distribution of the respondents as per assessment of morbidity pattern, 47.0percent of taxi drivers were having lower back pain frequently, 38.0percent of occasionally, and 15.0percent never with ranks I and mean score of 2.32, 37.0percent frequently, 47.0percent occasionally, and 16.0percent never experiencing gastric problem is rank II with a mean score of 2.21 whereas 31.0 percent suffering from headache frequently, 51.0 percent occasionally and 18.0 percent never as though 32.0 percent frequently, 49.0 percent occasionally, 19.0 percent never had fatigue also like this 34.0 percent frequently, 45 percent occasionally and 21.0 percent never had stress with ranks III and mean score 2.13. 29.0 percent frequently, 48.0 percent occasionally, 23.0 percent never were having joint pain followed by 28.0 percent frequently 50.0 percent occasionally, 22.0 percent never were having depression with mean score 2.06 and rank IV. Whereas 17.0 percent frequently, 64.0 percent occasionally and 19.0 percent never had cough and cold with mean score 1.98 and rank V followed by 18.0 percent frequently were suffering from insomnia, 50.0 percent occasionally while 32.0 percent never with mean score 1.86 and sixth VI. As though 19.0 percent frequently, 47.0 percent occasionally and 34.0 percent never were having eye problem with mean score of 1.85 and rank VII. 15.0 percent frequently, 53.0 percent occasionally and 32.0 percent never were having fever with mean score 1.83 and rank VIII whereas 17.0 percent frequently, 32.0 percent occasionally and 51.0 percent never were having arthritis with mean score 1.66 and rank IX. 15.0 percent of taxi drivers frequently were having heart disease, 32.0 percent occasionally and 53.0 percent never suffering from heart disease is last with the lowest mean score 1.62 and rank X, indicating it is frequently experienced but with less overall impact. This data highlighted that most of the respondents were having lower back pain and least of the respondents were having heart disease in the study area of Kanpur City. **Murray *et al.* (2019)** indicated that drivers were more likely to report musculoskeletal pain, less sleep, more fatigue and less physical activity as compared to non- drivers.

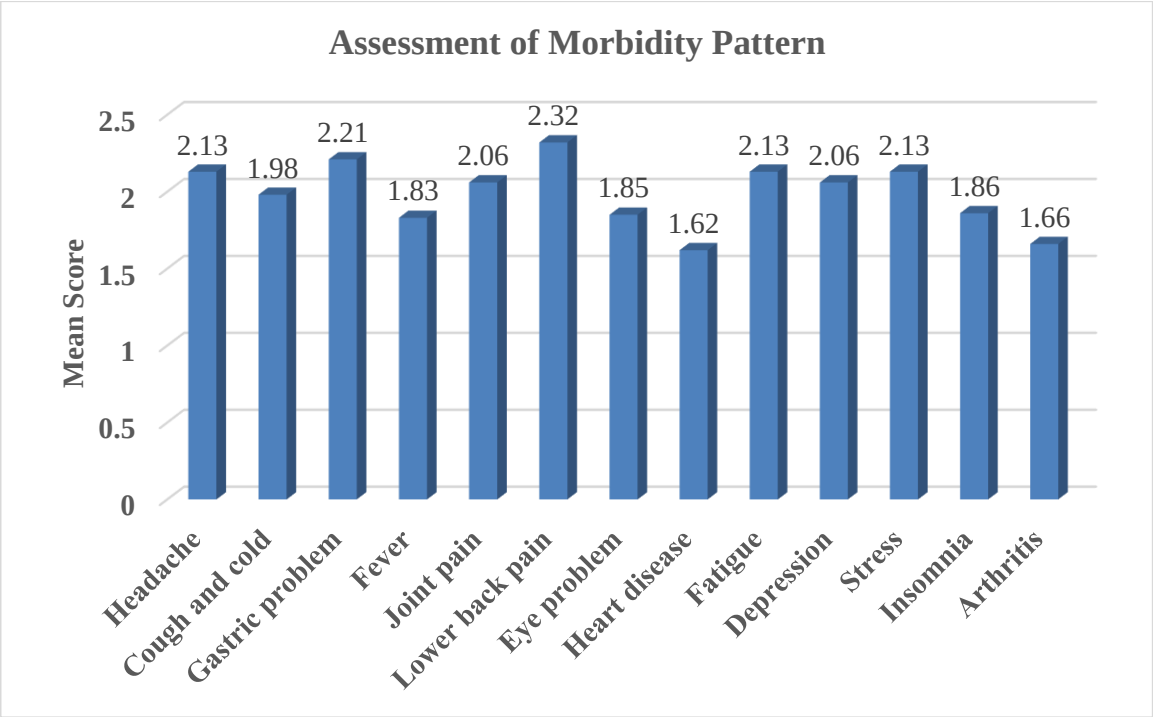

Table 4.8: Distribution of respondents on the basis of assessment of morbidity pattern.

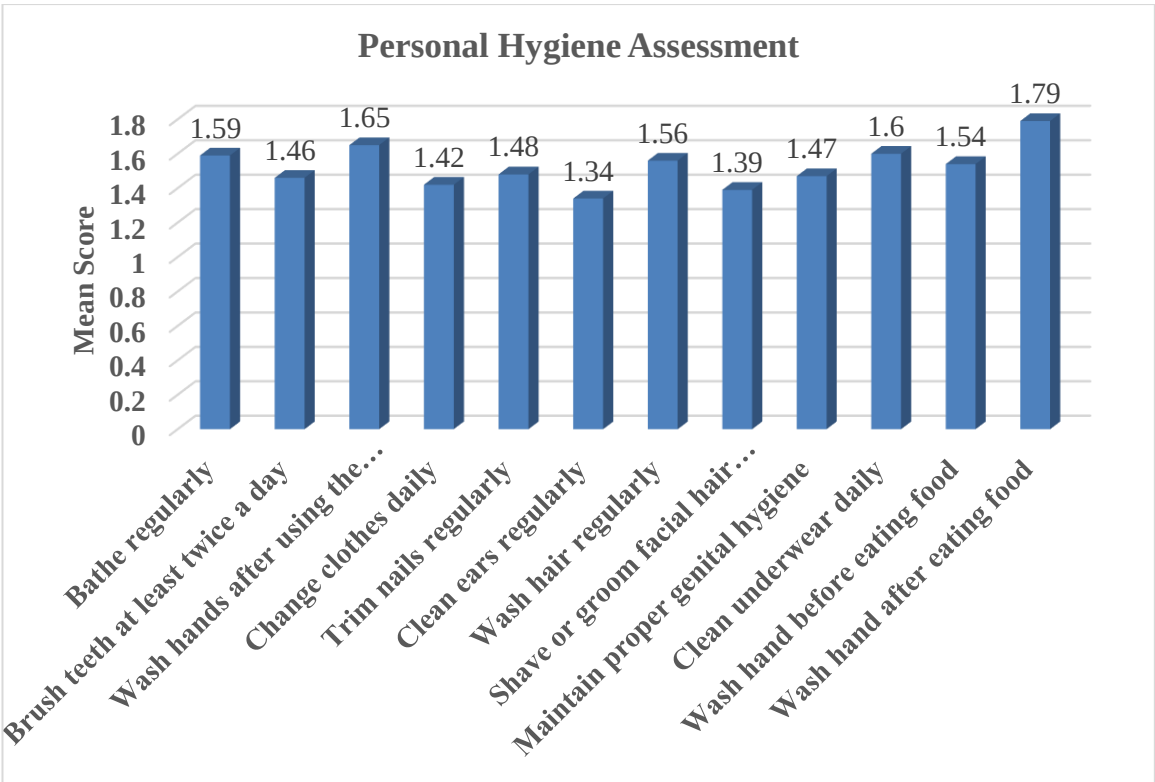

Table: 4.9: Distribution of the respondents on the basis of assessment of personal hygiene.

4.9 Personal Hygiene

Table: 4.9: Distribution of the respondents on the basis of assessment of personal hygiene.

S. No.	Personal Hygiene Assessment	Yes	No	Mean Score	S.D.	Rank
1.	Bathe regularly	59.0	41.0	1.59	1.09	IV
2.	Brush teeth at least twice a day	46.0	54.0	1.46	0.96	IX
3.	Wash hands after using the restroom	65.0	35.0	1.65	1.14	II
4.	Change clothes daily	42.0	58.0	1.42	0.92	X
5.	Trim nails regularly	48.0	52.0	1.48	0.98	VII
6.	Clean ears regularly	34.0	66.0	1.34	0.82	XII
7.	Wash hair regularly	56.0	44.0	1.56	1.06	V
8.	Shave or groom facial hair regularly	39.0	61.0	1.39	0.88	XI
9.	Maintain proper genital hygiene	47.0	53.0	1.47	0.97	VIII
10.	Clean underwear daily	60.0	40.0	1.60	1.10	III
11.	Wash hand before eating food	54.0	46.0	1.54	1.04	VI
12.	Wash hand after eating food	79.0	21.0	1.79	1.26	I

Table: 4.9: Perusal of the table depicts the distribution of the respondents on the basis of assessment of personal hygiene, washing hands after eating food were found to the most common habit of 79.0 percent of taxi drivers and 21.0 percent were not washing their hand after eating food with a mean score of 1.79, standard

deviation 1.26 and rank I followed by 65.0 percent of taxi drivers were washing their hands after using the restroom and 35.0 percent were not washing hands after using the restroom with a mean score of 1.65, standard deviation 1.14 and rank II. Changing underwear daily were practiced by 60.0 percent of taxi drivers and 40.0 percent were not changing their underwear daily with a mean score of 1.60, standard deviation 1.10 and rank III whereas 59.0 percent of taxi drivers were bathing regularly, 41.0 percent of taxi drivers were not bathing regularly with a mean score of 1.59, standard deviation 1.09 and rank IV. 56.0 percent of the taxi drivers were washing hair regularly with a mean score of 1.56, standard deviation 1.06 and rank V while washing hands before eating food were a habit of 54.0 percent of taxi drivers with a mean score of 1.54, standard deviation 1.04 and rank VI. As though 48.0 percent of taxi drivers were trimming their nails regularly and 52.0 percent were not trimming their nails regularly with a mean score of 1.48, standard deviation 0.98 and rank VII followed by 47.0 percent of taxi drivers were maintaining proper genital hygiene and 53.0 percent were not maintaining proper genital hygiene with a mean score of 1.47, standard deviation 0.97 and rank VIII, 46.0 percent of taxi drivers were brushing their teeth at least twice a day and 54.0 percent were not brushing their teeth at least twice a day with a mean score of 1.46, standard deviation 0.96 and rank IX while changing clothes daily were doing by 42.0 percent of taxi drivers with a mean score of 1.42, standard deviation 0.92 and rank X. 39.0 percent of taxi drivers were shaving or grooming facial hair regularly and 61.0 percent of taxi drivers were not shaving facial hair regularly with a mean score of 1.39, standard deviation 0.88 and rank XI. As though cleaning ears regularly were the least common habit of 34.0 percent of taxi drivers and 66.0 percent of taxi drivers were not cleaning their ears regularly with a mean score of 1.34, standard deviation 0.82 and rank XII in the study area of Kanpur City.

4.10 Lifestyle Information

Table 4.10: Distribution of the respondents according to their lifestyle.

S.No.	Lifestyle information of Taxi drivers		
1.	**Working hours per day**	**Frequency**	**Per cent**
	Less than 8 hours	14	14.0
	8 to 10 hours	54	54.0
	More than 10 hours	32	32.0
2.	**Breaks during shift**		
	Every hour	8	8.0
	Every 2 to 3 hours	41	41.0
	Rarely, if at all	51	51.0
3.	**Stress during driving**		
	Rarely	32	32.0
	Occasionally	41	41.0
	Frequently	27	27.0
4.	**Type of stress experience most frequently while driving**		
	Traffic congestion	16	16.0
	Dealing with difficult passengers	28	28.0
	Financial concerns	33	33.0
	Other	23	23.0
5.	**Sleeping hours per night**		
	7 to 9 hours	27	27.0
	5 to 7 hours	49	49.0
	Less than 5 hours	24	24.0
6.	**Regular health check-ups**		
	Annually	20	20.0
	Every few years	46	46.0

	Rarely or never	34	34.0
7.	**Smoking or alcoholic habits**		
	Never	21	21.0
	Occasionally	46	46.0
	Regularly	33	33.0
8.	**Other kind of drug addiction**		
	Yes	40	40.0
	No	60	60.0
9.	**Doing physical exercise and yoga**		
	Daily	17	17.0
	3 to 4 times a week	40	40.0
	Occasionally	27	27.0
	Rarely	16	16.0
10.	**Money management as a taxi driver**		
	Budgeting carefully	38	38.0
	Investing for the future	38	38.0
	Other	24	24.0

Table 4.10: The data present in the above table reveals the lifestyle factors of the taxi drivers, 54.0 percent of taxi drivers were reported working 8 to 10 hours per day, 32.0 percent worked more than 10 hours while 14.0 percent worked less than 8 hours in the Kanpur City. In terms of breaks during shifts 51.0 percent of taxi drivers took breaks rarely, if at all, 41.0 percent took break every 2 to 3 hours during shift while only 8.0 percent took breaks every hour followed by Regarding stress during driving 41.0 percent of taxi drivers felt stressed occasionally, 32.0 percent were reported feeling stressed rarely while 27.0 percent felt stressed frequently. 33.0 percent of taxi drivers most common stressor while driving was financial concerns followed by 28.0 percent dealing with difficult passengers, 23.0 percent of taxi drivers suffered from other type of stress during driving while

traffic congestion by 16.0 percent of taxi drivers and this suggests that financial pressures and challenging interactions significantly impacted their daily experiences on the road. Regarding sleep, nearly half of the drivers, 49.0 percent were reported getting sleep 5 to 7 hours per night, 27.0 percent were reported getting sleep 7 to 9 hours while 24.0 percent were reported sleeping less than 5 hours, which is generally considered insufficient for optimal health. Additionally, An annual health checkup is performed by 46.0 percent of taxi drivers and 34.0 percent rarely or never visiting for check-ups while only 20.0 percent of taxi drivers went through annual health check-ups. Regarding smoking and alcohol consumption 46.0 percent of taxi drivers stated they do so occasionally, 33.0 percent admitted to smoke or drink regularly while 21.0 percent of taxi drivers were not engaged in these habits followed by 60.0 percent reported were not having any other kinds of drug addiction while 40.0 percent of taxi drivers acknowledged having other kinds of drug addiction. In terms of physical activity, 40.0 percent of taxi drivers were doing exercise and yoga 3 to 4 times in a week, 27.0 percent were engaged in physical activity occasionally and 17.0 percent of taxi drivers were exercising daily while 16.0 percent were doing so rarely. Finally, in terms of money management, 38.0 percent of drivers practiced careful budgeting and investing for the future, indicating a proactive approach to financial stability. However, 24.0 percent indicated other methods, showing a diversity in how drivers manage their finances.

Widajati *et al.* (2024) studied that a fatigue rate of 61.8% among online motorcycle taxi drivers, attributed to factors were including insufficient sleep duration (less than 7 hours) being under 30 years of age, marital status, lack of regular physical activity and work-related stress. Majority of the drivers, 79.1% (87 drivers), were working more than eight hours daily, while 20.9% (23 drivers) were working fewer hours.

Table 4.11: Correlation coefficient between lifestyle and health.

Correlation coefficient (r)	
Variable	**Lifestyle of taxi drivers**
Impact on health	0.1998*

Table 4.11: The table reveals the correlation coefficient between lifestyle and health of the taxi drivers, Lifestyle of the taxi drivers significantly correlated with their health and it was observed that various aspects of lifestyle, such as diet, exercise, smoking, and stress levels, can influence health, but their effects might be diluted by other factors like genetic predispositions, environmental conditions, and access to healthcare.

Table 4.12: Correlation coefficient between dependent and independent variable.

Variables	Correlation coefficient (r)			
	Age	**Education**	**Income**	**Family size**
Food habits of Taxi drivers	0.1938*	-0.0604	0.2038*	-0.0354
Morbidity pattern	-0.0521	-0.0485	0.1485	-0.0883
Impact on heath	0.0665	0.2995*	-0.0683	0.2164*
Personal hygiene assessment	0.2172*	-0.0073	0.0101	-0.0382
Lifestyle information	-0.0368	0.0415	0.0599	0.1473

Table 4.12: Table shows the correlation coefficient between dependent variable and independent variables, Food habits of taxi drivers significantly correlated with

their age and income hence per age of the respondents food habit of the taxi drivers preferred choice and consumed milk products and as per income they were taking carbohydrate and fat diet in the study area. Education and family size were non-significant with food habit of taxi drivers. Morbidity pattern of the respondent was negative correlated with age education family size of the respondents at 5 percent level of significance. Impact on health of respondent was significantly related to education and family size at 5 percent level of significance hence per education they were aware about health issue. Personal hygiene assessment was significantly correlated with age of the taxi driver at 5 percent probability level and 98 degrees of freedom, Lifestyle information of the respondents were non-significant correlated with education.

CHAPTER- V

SUMMERY AND CONCLUSION

Taxi drivers are integral to urban transportation, providing essential on-demand services. They navigate complex city environments, adapt to traffic changes, and ensure safe, timely transport for passengers. However, their work involves long hours, exposure to traffic stress, and variable income, leading to challenging working conditions **(Smith & Johnson, 2019)**. Despite these challenges, many taxi drivers take pride in their work and aim to deliver excellent service. Technological advancements, such as ride-hailing apps, have significantly transformed the taxi industry, improving booking and payment processes for drivers and passengers **(Jones et al., 2020).**

In India, the taxi industry's evolution from horse-drawn carriages during the colonial period to motorized taxis highlights its historical significance **(Bhagat, 2018)**. Taxi drivers today face various health risks, including cardiovascular diseases, stress, sleep disorders, musculoskeletal issues, and poor nutrition due to irregular eating schedules and limited access to healthy food **(Garcia et al., 2018)**. Addressing these health concerns requires comprehensive strategies, including nutritional assessments, lifestyle interventions, and technology-driven health management solutions **(Smith & Johnson, 2019)**. This study aims to assess the nutritional and health status of taxi drivers in Kanpur City, examining their dietary patterns, food habits, health status, and lifestyle factors impacting their overall well-being. Through this analysis, the research seeks to understand the complex interactions between taxi drivers' occupational demands, health, and the broader urban transportation ecosystem. Hence, considering the above facts in mind, the investigation entitled "**NUTRITIONAL AND HEALTH ASSESSMENT AND MANAGEMENT OF LIFESTYLE FACTORS OF TAXI DRIVERS IN KANPUR CITY"** was an attempt to find out the prevalence of nutritional status

and also analyse the health problem due to their job of taxi drivers. Therefore, the present study was conducted with the following objectives:

1. To assess the nutritional status of taxi drivers.
2. To assess the nutrient intake of daily diet.
3. To study the food habits and dietary pattern of taxi drivers.
4. To assess the health status of taxi drivers.
5. To assess the life style and their impact on their health.

Methods and material

The research methodology of the present study was planned keeping in view to scope of the study and time constraints. This section provides the detailed description of the procedure adopted for conducting the study. In order to achieve the objective of the study description cum experimental design was used.

The present study was carried out in Kanpur city. Purposive random sampling technique was used to selection the study area and sample. Total 100 samples were selected from the population and descriptive data was collected. A per-code questionnaire was used as a tool to collect the data with respect to general and specific information of taxi drivers. The anthropometric assessment was done by taking height, weight, and body mass index of taxi drivers. The nutrients intake was computed by 24 hours recall method.

Statistical analysis and interpretation of the data

Subjective statistics i.e. Frequency, Percentage, mean, Standard deviation, weighted mean and descriptive statistics i.e. Rank, correlation coefficient were used for analysis of data.

Findings of the study

General profile of the respondents

Maximum 51.0 percent of taxi drivers were found to be in the age group 30-40 years with mean age 34 years and standard deviation 2 years where as only 4.0

percent of the respondents belonged to the age group 50 years and above with mean age 53 years and standard deviation 5 years in the research study area. Maximum 78.0 percent of respondents belonged to Hindu religion and 22.0 percent of respondents belonged to Muslim religion.

47.0 percent of respondents belonged to the OBC category, 28.0 percent of respondents belonged to the SC/ST category and 25.0 percent of taxi drivers belonged to the general caste. Maximum 43.0 percent of taxi drivers were having education of intermediate and above level, while 12.0 percent of respondents were found in primary level of education.

Maximum 68.0 percent of respondents were found to be married while 32.0 percent of taxi drivers were found to be unmarried. 48.0 percent of taxi driver belonged to the nuclear family, 33.0 percent of taxi driver belonged to the Joint family where as 19.0 percent of taxi drivers belonged to the extended family.

46.0 percent of the taxi drivers were earning Rs. 15,000 to Rs. 20,000 with mean income Rs. 16170 and standard deviation Rs. 1253 followed by 7.0 percent of taxi drivers were earning Rs. 25,000 and above per month. Majority of taxi drivers were earning Rs. 15,000 to Rs. 20,000 per month income. 44.0 percent of respondents were having families with 4 to 5 members, while larger families of 8 or more members were the least percentage making up just 4.0 percent.

36.0 percent of families were earning between Rs. 25,000 to Rs. 35,000 with mean income Rs. 28889 and standard deviation Rs. 3115 where as 11.0 percent of families earned Up to Rs. 15,000 with mean income Rs. 12682 and standard deviation Rs. 1620.

Anthropometric Measurement

51.0 percent of respondents belonged to the 30 to 40 years with mean height 161.6 cm and standard deviation 10.9 cm whereas only 4.0 percent of respondents belonged to the age group 50 year and above and have a mean height 166.3 cm and standard deviation 3.6 cm in the study area. The correlation coefficient (r)

between age group and height of the respondents was found to be non- significant at 5% level of significance. 51.0 percent of respondents belonged to the 30 to 40 years with mean weight 63 kg and standard deviation 12.8 kg while 25.0 percent of the respondents belonged to the age group 40 to 50 years with mean weight 62.4 kg and standard deviation 12.9 kg whereas only 4.0 percent of respondents belonged to the age group 50 year and above were having mean weight 64.5 kg and standard deviation 7.1 kg in the study area. The correlation coefficient between age group and weight of the respondents was found to be non- significant at 5% level of significance.

51.0 percent of respondents belonged to the 30 to 40 years with mean BMI 23.9 and standard deviation 3.6 while only 4.0 percent of taxi drivers belonged to the age group 50 years and above with mean BMI 23.1 and standard deviation 3.2 in the study sample. The correlation coefficient (r) between age group and BMI of the respondents was found to be non- significant at 5% level of significance.

Maximum 54.0 percent of respondents were having normal health status followed by 39.0 percent of taxi drivers were found to be overweight in the study sample. 5.0 percent of respondents were found to be underweight and only 2.0 percent of taxi drivers were having obesity.

Education of the taxi drivers were affects positively with height, weight and BMI. As per family size of the taxi drivers were significantly correlated with height, weight and BMI, while on the basis of income of taxi drivers were also positively correlated with height, weight and BMI.

Clinical Assessment

As per assessment of general appearance, 64.0 percent of taxi drivers were having healthy general appearance followed by 26.0percent of taxi drivers were found to be unwell in the study area. 10.0 percent of taxi drivers were suffering from ill. 66.0 percent of respondents were having normal hair indicating the majority, 26.0 percent of respondents were having easily pluckable hair and only 8.0 percent of respondents were having lustreless hair which indicating a smaller

group with dull hair. The above table highlights that maximum taxi drivers had normal hair whereas rest of the respondents were suffering from hair damage due to inadequate intake of protein, vitamins, zinc, iron which are essential for hair health. Psychological problem i.e. stress, headache etc. were the main reasons of hair problems.

The distribution of respondents on the basis of assessment of face, 59.0 percent of taxi drivers were having normal face, 22.0 percent of respondents were having any other type of face whereas only 19.0 percent of respondents were having moon face.

On the basis of assessment of eyes, maximum 62.0 percent of taxi drivers were found to be normal eyes, 18.0 percent of taxi drivers were having dry eyes followed by 16.0 percent of taxi drivers were suffering from pale eyes and only 4.0 percent of respondents were having bitot spots in out of 100.0 percent of respondents. Whereas maximum respondents were having normal eyes and 40 percent of taxi drivers were facing eyes problem i.e. pale, dry and bitot spots due to vitamin A deficiency, iron deficiency and dry environment.

The distribution of respondents according to assessment of cornea, 80.0 percent of taxi drivers were having normal cornea, 11.0 percent of taxi drivers were having dry cornea and 9.0 percent of taxi drivers were having opaque cornea.

Maximum 75.0 percent of taxi drivers were having normal lips followed by 11.0 percent of taxi drivers were having cheilosis whereas 10.0 percent of taxi drivers had swollen lips and only 4.0 percent of respondents were found to be angular stomatitis.

The distribution of the taxi drivers on the basis of assessment of tongue, Maximum 76.0 percent of taxi drivers were having normal tongue, 13.0 percent of taxi drivers had pale tongue and 11.0 percent of taxi drivers were having red tongue due to deficiency of vitamin B12 and folic acid in their body.

Maximum, 63.0 percent of taxi drivers were having normal teeth, 22.0 percent of taxi drivers were having stained and 9.0 percent of respondents had mottled teeth while only 6.0 percent of respondents were found to be caries teeth.

The distribution of the respondents on the basis of assessment of gums, 75.0 percent of respondents were having normal gums followed by 13.0 percent of taxi drivers were having bleeding in gums and 12.0 percent of respondents had swollen gums.

71.0 percent of taxi drivers were having normal skin followed by 19.0 percent of taxi drivers were found to be dermatitis in the study area of Kanpur City. Only 10.0 percent of taxi drivers were suffering from dermatitis. As per assessment of nails, 55.0 percent of taxi drivers were having normal nails, 30.0 percent of taxi drivers were having pale nails while 15.0 percent of taxi drivers were found to be brittle nails. On the basis of assessment of oedema, 78.0 percent of taxi drivers were having normal body or absent oedema while oedema present in 22.0 percent of taxi drivers due to deficiency of protein in their body and prolonged illness also cause oedema.

24-Hours Dietary Recall Method

Up to 30 years age group 20.0 percent of the respondents have taken energy 2304.0 kcal with standard deviation 119.5 kcal whereas in the age group 30 to 40 years 51.0 percent of respondents have taken energy 2109.1 kcal with standard deviation 108.1 kcal in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have taken average energy 2147.6 kcal with standard deviation 130.2 kcal while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average energy 2211.3 kcal with standard deviation 103.5 kcal in the study area. The average energy have taken by respondents 2237.8 kcal which was found 17.4 percent deficient from RDA. It was observed majority of the taxi drivers were skip breakfast and some drivers were skip lunch due to unbalance working schedule in

a day. So most of the respondents were not consuming sufficient amount of cereals, legumes and nuts etc. The observed value of correlation coefficient (0.1990*) was significant at 5% level of significance.

Up to 30 years age group 20.0 percent of respondents have taken CHO 231.3 gm with standard deviation 52.8 gm whereas in the age group 30 to 40 years 51.0 percent of respondents have taken average CHO 211.5 gm with standard deviation 44.6 gm in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have taken average CHO 218.5 gm with standard deviation 45.8 gm while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average CHO 239.9 gm with standard deviation 55.3 gm in the study area. The average CHO have taken by respondents 218.3 gm which was found 67.9 percent increased as compared to RDA due to high intake of carbohydrates rich foods (potatoes, rice, noodles, pasta, crackers, jaggery, banana and cereals etc.) in their daily diet. The observe value of correlation coefficient (0.1055) was found to be significant at 5 percent level of significance.

20.0 percent of taxi drivers were found up to 30 years of age group have taken average protein 52.8 gm with standard deviation 4.1 gm while 51.0 percent of taxi drivers were found in 30 to 40 years of age group and have taken average protein 49.8 gm with standard deviation 5.4 gm in the study area of Kanpur City. In the age group 40 to 50 years 25.0 percent of respondents have taken average protein 51.7 gm with standard deviation 5.9 gm while only 4.0 percent of taxi drivers belonged to above 50 years age group and have taken average protein 48.4 gm with standard deviation 8.8 gm in the study area of Kanpur City. Total average protein have taken by respondents 50.8 gm which was found 5.9 percent deficit as compared to RDA with standard deviation 5.5 gm. It was observed majority of respondents were not consuming sufficient quantity of legumes, egg, fish, poultry, milk and milk products etc. which is high in protein.

20.0 percent of taxi drivers were found up to 30 years of age group have taken average fat 37.9 gm with standard deviation 5.6 gm while 51.0 percent of taxi drivers were found in 30 to 40 years of age group and have taken average fat 35.9 gm with standard deviation 5.2 gm in the study area of Kanpur City. Taxi drivers belonged to the age group 40 to 50 years 25.0 percent have taken average fat 33.3 gm with standard deviation 6.2 gm where only 4.0 percent of taxi drivers belonged to above 50 years age group have taken average fat 32.6 gm with standard deviation 5.2 gm in the study area of Kanpur City. Total average fat have taken by respondents 35.5 gm which was found to be 18.3 percent increased from RDA with standard deviation 5.7 gm. Taxi drivers were consuming junk food, fried and oily food and processed food during their work. The observed value of correlation coefficient (0.2762*) was found to be significant at 5 percent level of significance.

Up to 30 years age group 20.0 percent of respondents have taken average calcium 373.2 mg with standard deviation 62.0 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have taken average calcium 376.1 mg with standard deviation 68.4 mg in the research study area of Kanpur City. 25.0 percent of respondents belonged to the age group 40 to 50 years have taken average calcium 367.4 mg with standard deviation 73.5 mg while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average calcium 335.0 mg with standard deviation 102.6 mg in the study area. Total average calcium have taken by respondents 371.7 mg which was found to be 62.8 percent deficient from RDA. The observed value of correlation coefficient (0.0577) was significant at 5 percent level of significance. The average of calcium consumption of taxi drivers were found very low because most of the respondents were not consuming some fruits such as kiwi, mulberries, oranges, some vegetable such as turnip green, broccoli, kale, other green leafy vegetables, milk and milk products etc.

20.0 percent of respondents belonged to the age group up to 30 years have taken average phosphorus 1014.7 mg with standard deviation 99.8 mg followed by 51.0 percent of respondents belonged to the age group 30 to 40 years have taken average phosphorus 917.1 mg with standard deviation 129.5 mg in the study area. The age group of 40 to 50 years representing 25.0 percent of respondents had average intake of phosphorus 913.6 mg with standard deviation 114.6 mg whereas only 4.0 percent of respondents belonged to the age group 50 years and above have taken average phosphorus 964.8 mg with standard deviation 92.4 mg. The total average phosphorus intake across all age groups were found to be 969.1 mg which was 3.09 percent deficit from RDA with standard deviation 120.4 mg. Respondents were not including phosphorus rich food like cheese, yogurt, milk, chicken, pork, organ meats, seafoods, nuts, sunflower and pumpkin seeds in diet. The correlation coefficient between age and phosphorus intake was (0.1998*) significant at 5 percent level of significance.

20.0 percent of the respondents belonged to age group up to 30 years have taken average selenium 22.3 µg with standard deviation 15.3 µg whereas those age group 30 to 40 years representing 51.0 percent of the respondents have taken average selenium 21.8 µg with standard deviation 21.3 µg. Taxi drivers belonged to the age group of 40 to 50 years constituting 25.0 percent of the taxi drivers have taken average selenium 23.4 µg with standard deviation 18.3 µg and only 4.0 percent of respondents belonged to the age group 50 years and above have taken average selenium 23.8 µg with standard deviation 27.7 µg. The total average intake of selenium were 23.7 µg found to be 40.5 percent deficient from RDA with standard deviation 20.0 µg. The observed value of correlation coefficient between age and selenium intake was (0.2179*) significant at 5 percent level of significance. Selenium consumption of taxi drivers were found approximately 50.0 % low because majority of the respondents were not consuming seafoods, organ meat, nuts, beef, fish, meat and poultry etc. in their diet.

20.0 percent of the respondents belonged to age group up to 30 years have taken average zinc 8.6 mg with standard deviation 1.8 mg whereas those age group 30 to 40 years representing 51.0 percent of the respondents have taken average zinc 8.2 mg with standard deviation 1.7 mg. Taxi drivers belonged to the age group of 40 to 50 years constituting 25.0 percent of the taxi drivers have taken average zinc 7.2 mg with standard deviation 1.5 mg and only 4.0 percent of respondents belonged to the age group 50 years and above have taken average zinc 8.9 mg with standard deviation 0.7 mg. The total average intake of zinc were 8.0 mg found to be 52.9 percent deficient from RDA with standard deviation 1.7 mg. Zinc is an essential antioxidants and helps our immune system and metabolism functioning. It is naturally present in some foods like beans, meat, fish, grapefruits and oysters etc. and low intake of zinc confirmed the taxi drivers were not including these food products in their diet.

Up to 30 years age group 20.0 percent of the respondents have taken average iron 15.3 mg with standard deviation 2.5 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have taken average iron 16.2 mg with standard deviation 2.5 mg in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have taken average iron 15.3 mg with standard deviation 2.2 mg while only 4.0 percent of the respondents belonged to above 50 years of age group have taken average iron 16.5 mg with standard deviation 2.4 mg in the study area. Total average iron have taken by respondents 15.8 mg which was found to be 15.8 percent deficient from RDA with standard deviation 2.5 mg. The value of correlation coefficient between age and iron intake was (0.1128) significant at 5 percent level of significance. It was observed that majority of the respondents were not taking iron rich foods like green leafy vegetables, dried fruits, tofu and brown rice etc.

Up to 30 years age group 20.0 percent of the respondents have average vitamin B1 intake 1.6 mg with standard deviation 0.9 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have average vitamin B1 intake 1.4 mg

with standard deviation 1.0 mg in the research study area of Kanpur City. 25.0 percent of respondents belonged to age group 40 to 50 years have vitamin B1 intake 1.5 mg with standard deviation 1.1 mg while only 4.0 percent of the respondents belonged to more than 50 years of age group have vitamin B1 intake 1.4 mg with standard deviation 1.0 mg in the study area. Total average vitamin B1 have taken by respondents 1.6 mg which was found to be 11.1 percent deficient from RDA with standard deviation 1.0 mg. The value of correlation coefficient between age and vitamin B1 intake was (0.2021*) significant at 5 percent level of significance. It observed that taxi drivers were not including sufficient quantity of vitamin B1 rich foods such as whole grain, meat, fish, legumes and pork etc. in their daily diet.

Up to 30 years age group 20.0 percent of the respondents have vitamin B2 intake 1.6 mg with standard deviation 0.9 mg whereas in the age group 30 to 40 years 51.0 percent of respondents have vitamin B2 intake 1.3 mg with standard deviation 1.0 mg in the research study area. 25.0 percent of respondents belonged to age group 40 to 50 years were found to be average intake of vitamin B2 was 1.5 mg with standard deviation 1.2 mg while only 4.0 percent of the respondents belonged to above 50 years of age group have average vitamin B2 intake 2.3 mg with standard deviation 0.6 mg in the study area of Kanpur City. Total average vitamin B2 have taken by respondents 1.5 mg which was found to be 40.0 percent deficient from RDA with standard deviation 1.0 mg. The observed value of correlation coefficient between age and vitamin B2 intake was (0.1987*) significant at 5 percent level of significance. Riboflavin deficiency indicates the taxi drivers were not consuming whole grain, milk, organ meats, avocados, almonds and green leafy vegetables etc.

20.0 percent of taxi drivers belonged to the age group up to 30 years were found to be vitamin B3 deficit with average intake 16.2 mg and standard deviation of 2.0 mg followed by 51.0 percent of respondents in the age group 30 to 40 years expressed as a vitamin B3 deficit with average intake 15.3 mg and standard

deviation 2.5 mg in the study area. 25.0 percent of taxi drivers in the 40 to 50 years age group were found to be vitamin B3 deficit with average intake 15.5 mg and standard deviation 2.3 mg. While 4.0 percent of respondents have taken 15.6 mg with standard deviation 3.0 mg of vitamin B3. Total average vitamin B3 have taken by respondents 15.5 mg which was 13.9 percent deficit from RDA with standard deviation 2.4 mg. It observed that majority of respondents were not consuming niacin rich foods such as fish, beef, salmon, liver, avocados, peanuts and chicken in daily diet. Maximum of the respondents had Vitamin B3 deficiency due to their vegetarian food habits. Niacin deficiency can result in symptoms like skin rashes, diarrhoea, memory loss etc.

On the basis of vitamin b9 consumption, 20.0 percent of taxi drivers belonged to the age group up to 30 years were found to be vitamin B9 deficit with average intake 264.5 µg and standard deviation of 81.1 µg followed by 51.0 percent of respondents in the age group 30 to 40 years expressed as a vitamin B9 deficit with average intake 269.6 µg and standard deviation 75.4 µg in the study area. 25.0 percent of taxi drivers in the 40 to 50 years age group were found to be vitamin B9 deficit with average intake 256.3 µg and standard deviation 84.0 µg. While 4.0 percent of respondents have taken 269.1 µg with standard deviation 49.7 µg of vitamin B9. Total average intake of vitamin B9 were found to be 265.2 µg which was 11.6 percent deficit from RDA with standard deviation 77.1 µg.

20.0 percent of taxi drivers were found to be deficit of vitamin B12 up to 30 years of age group with mean score 1.5 µg and standard deviation 1.2 µg whereas 51.0 percent of respondents were found to be deficit in the age group 30 to 40 years with average intake 1.3 µg and standard deviation 1.1 µg in the study area. In the age group 40 to 50 years 25.0 percent of taxi drivers were found to be deficit of vitamin B12 intake with mean score 1.0 µg and standard deviation 1.0 µg while only 4.0 percent of respondents belonged to the above 50 years age group had average intake 0.4 µg with standard deviation 0.3 µg. The total mean score of vitamin B12 have taken by respondents 1.2 which was found to be 52.0 percent

deficit from RDA and standard deviation 1.1 µg. The observed value of correlation coefficient between age and vitamin B12 was (-0.1243) significant at 5 percent level of significance and negatively correlated with age. It was observed that respondents were not taking vitamin B12 rich foods in their diet such as egg, fish, chicken and dairy products.

As per intake of vitamin A, 20.0 percent of taxi drivers were found to be deficit of vitamin A up to 30 years of age group with mean score 466.6 µg and standard deviation 129.2 µg whereas 51.0 percent of respondents were found to be deficit in the age group 30 to 40 years with average intake 470.1 µg and standard deviation 163.8 µg in the study area. In the age group 40 to 50 years 25.0 percent of taxi drivers were found to be deficit of vitamin A intake with mean score 435.9 µg and standard deviation 160.5 µg while only 4.0 percent of respondents belonged to the above 50 years age group had average intake 412.5 µg with standard deviation 168.1 µg. The total mean score of vitamin A have taken by respondents 458.5 µg which was found to be 54.2 percent deficit from RDA because majority of the respondents were not including spinach, broccoli, kale, carotene and fiber rich food in their diet with standard deviation 155.4 µg. The observed value of correlation coefficient between age and vitamin A was (0.1987*) significant at 5 percent level of significance.

20.0 percent of taxi drivers were found to be deficit of vitamin C up to 30 years of age group with mean score 29.4 mg and standard deviation 17.4 mg whereas 51.0 percent of respondents were found to be deficit in the age group 30 to 40 years with average intake 38.3 mg and standard deviation 28.0 mg in the study area. In the age group 40 to 50 years 25.0 percent of taxi drivers were found to be deficit of vitamin C intake with mean score 25.1 mg and standard deviation 13.6 mg while only 4.0 percent of respondents belonged to the above 50 years age group had average vitamin C intake 36.8 mg with standard deviation 6.1 mg. The total mean score of vitamin C was found to be 58.5 percent deficit as compared to RDA and standard deviation 23.0 mg. The value of correlation coefficient between

age and vitamin C was (-0.1163) significant at 5 percent level of significance and negatively correlated with each other. Majority of the respondents were not including vitamin C rich foods in diet.

The table pertaining it **table 4.4.17:** reveals the correlation coefficients between nutrients intake and independent variables of the taxi drivers, Education of the taxi drivers were found to be significantly correlated with protein, calcium, iron, vitamin A and vitamin C at 5 % level of significance, hence as per education of the taxi drivers they were aware with these nutrients intake. Education of the taxi drivers plays non-significant role with energy, fat, phosphorus, zinc, vitamin B1, vitamin B2, Vitamin B9 and vitamin B12. Hence they were not fully aware with these nutrients at 5% level of significance in the study area. Education of the taxi drivers were found to be negatively correlated with CHO and selenium at 5 % level of significance. As per family size of the taxi drivers were found significantly correlated with energy, CHO, vitamin B2 and vitamin C and fat, phosphorus, zinc, vitamin B1, B3, B12, vitamin A were found to be non- significant at 5 % level of significance while protein, calcium, selenium, iron and vitamin B9 were found to be negatively correlated with family size of the respondents. Furthermore, On the basis of income were found to be significantly correlated with energy, protein, calcium, iron, vitamin B12, vitamin A and vitamin C at 5 % level of significance and CHO, fat, phosphorus, selenium, zinc, vitamin B1, vitamin B1, vitamin B2, vitamin B3 and vitamin B9 were found to be non-significant at 5 percent level of significance.

Dietary pattern

The average dietary intake shows the 48.0 percent of taxi drivers were consuming cereals twice a day, with a mean score of 3.44 and rank I. Fatty foods were consumed by 45.0 percent of the taxi drivers with rank II and a mean score of 2.82, while pulses and legumes were consumed by 31.0 percent of taxi drivers less than one per week with rank III and a mean score of 2.20. 40.0 percent of taxi

drivers have taken green leafy vegetables less than one per week with a mean score of 2.18 and rank IV. Vegetables, other vegetables, and non-veg/eggs were having rank V, VI, and VIII respectively, with mean scores of 2.15, 2.13, and 1.93. Roots and tubers were having rank IX with a mean score of 1.84, milk and milk products were having rank X with 1.82, and fruits/fruit juice were having rank XI with 1.81 mean score.

Food Habits of Taxi Drivers

The distribution of taxi drivers on the basis of breakfast intake, 35.0 percent of respondents were consuming breakfast occasionally, 28.0 percent were consuming rarely, and 22,0 percent were consuming every day while only 15.0 percent were consuming never in the study area of Kanpur City.

Distribution of taxi drivers based on preferred breakfast choice, 29.0percent of the respondents were eating cereals/granola, 27.0percent were eating eggs/ toast and 26.0percent were eating pastries/doughnuts, while only 18.0percent were eating other breakfast.

Maximum 42.0 percent of respondents were found omnivore who consume meat and plant-based foods, 27.0 percent were found pescatarian who avoid meat but eat fish and other seafoods and 24.0 percent of respondents were found vegetarian who avoid all animal products whereas only 5.0 percent belonged to the other dietary preference.

On the basis of specific dietary restrictions, 74.0 percent of taxi drivers were not having any type of dietary restriction while 26.0 percent of taxi drivers were having specific dietary restriction in the study area of Kanpur City. 34.0 percent of taxi drivers were consuming snacks multiple time in a day followed by 27.0 percent have taken several time in a week, 20.0 percent have taken once a day and 12.0 percent have taken rarely while 7.0 percent of the taxi drivers never consumed snacks.

Maximum 34.0 percent of taxi drivers were having moderate knowledge about nutrition and healthy eating, 23.0 percent of taxi drivers were not having very knowledge about nutrition and healthy eating, 22.0 percent of taxi drivers were having somewhat knowledge about nutrition and healthy eating and 11.0 percent of taxi drivers were having very knowledge about nutrition and healthy eating while 10.0 percent of taxi drivers were not having knowledge about nutrition and healthy eating.

The distribution of respondents on the basis of millet intake, 45.0 percent of taxi drivers have taken millets and millets products twice a month, 40.0 percent of taxi drivers have taken millets and millets products twice a week while 15.0 percent of taxi drivers have taken millets and millets products once a day. 31.0 percent of taxi drivers have taken meal twice a day during working shift followed by 28.0 percent have taken meal occasionally during working shift, 24.0 percent have taken meal once a day and 11.0 percent of taxi drivers have never taken meal during working shift while 6.0 percent of taxi drivers have taken meal more than twice a day during working shift.

The eating habits of taxi drivers during their working shifts, 27.0 percent of taxi drivers were choosing the fast food joints, homemade meals brought from home were nearly as popular, chosen by 26.0 percent of taxi drivers. Snacks from convenience stores were the next most common choice, selected by 20.0 percent of taxi drivers followed by restaurants were chosen by 15.0 percent of taxi drivers and other category included 12.0 percent of taxi drivers were having different eating preferences during their working shifts.

The perusal of the **table 4.6.10:** indicates the distribution of respondents on the basis of money spent on food**,** 15.0 percent of income was the most common expenditure on food by 39.0 percent of taxi drivers followed by 28.0 percent of taxi drivers were spending their income on food 20.0 percent and 30.0 percent of

income were spent by 18.0 percent taxi drivers whereas 10 percent of income was the least common expenditure on food by 15.0 percent of taxi drivers.

Impact on health

This information shows the significant health impacts faced by taxi drivers due to their job, physical discomfort or pain related to the job is a common issue with 47.0 percent of taxi drivers were experiencing it frequently or almost daily, 31.0 percent reported rarely feeling pain while 22.0 percent reported occasionally by physical discomfort. Taxi drivers were suffering from specific health issues include leg pain 25.0 percent, shoulder pain 19.0 percent, headaches 18.0 percent and neck pain 10.0 percent among others like eye strain 9.0 percent, respiratory problems 7.0 percent and back pain 5.0 percent in the study area of Kanpur City. 43.0 percent reported negative or very negative impacts on mental health of a taxi drivers, 31.0 percent remain neutral while 26.0 percent of taxi drivers perceive a positive or very positive effect on their mental health. In case of mental health challenges among taxi drivers, 29.0 percent of taxi drivers affected by depression, 22.0 percent reported burnout, insomnia affects 19.0 percent of taxi drivers, anxiety and stress are also prevalent, impacting 11.0 percent and 9.0 percent of taxi drivers while 32.0 percent was unsure about their mental health status, indicating potential underreporting or lack of awareness. In terms of support and resources provided for taxi drivers, satisfaction levels are generally low, with 31.0 percent of taxi drivers dissatisfied and 12.0 percent very dissatisfied. Only 24.0 percent of taxi drivers are satisfied or very satisfied with the support provided, while 33.0 percent remain neutral. Regarding overall health, maximum 41.0 percent of taxi drivers rate their health as fair, 34.0 percent rate their health as good, while 17.0 percent considered their health poor and 8.0 percent rate it as excellent in the study area of Kanpur City. Changes in weight or overall health shows that 38.0 percent have not noticed any changes, 29.0 percent of taxi drivers have lost weight, 18.0 percent of taxi drivers are unsure about weight changes

while 15.0 percent have gained weight. This data highlights different type health issues faced by taxi drivers in the form of physical, psychological and other factors.

Assessment of Morbidity Pattern

The perusal of table reveals the distribution of the respondents as per assessment of morbidity pattern, 47.0percent of taxi drivers were having lower back pain frequently, 38.0percent of occasionally, and 15.0percent never with ranks I and mean score of 2.32, 37.0percent frequently, 47.0percent occasionally, and 16.0percent never experiencing gastric problem is rank II with a mean score of 2.21 whereas 31.0 percent suffering from headache frequently, 51.0 percent occasionally and 18.0 percent never as though 32.0 percent frequently, 49.0 percent occasionally, 19.0 percent never had fatigue also like this 34.0 percent frequently, 45 percent occasionally and 21.0 percent never had stress with ranks III and mean score 2.13. 29.0 percent frequently, 48.0 percent occasionally, 23.0 percent never were having joint pain followed by 28.0 percent frequently 50.0 percent occasionally, 22.0 percent never were having depression with mean score 2.06 and rank IV. Whereas 17.0 percent frequently, 64.0 percent occasionally and 19.0 percent never had cough and cold with mean score 1.98 and rank V followed by 18.0 percent frequently were suffering from insomnia, 50.0 percent occasionally while 32.0 percent never with mean score 1.86 and sixth VI. As though 19.0 percent frequently, 47.0 percent occasionally and 34.0 percent never were having eye problem with mean score of 1.85 and rank VII. 15.0 percent frequently, 53.0 percent occasionally and 32.0 percent never were having fever with mean score 1.83 and rank VIII whereas 17.0 percent frequently, 32.0 percent occasionally and 51.0 percent never were having arthritis with mean score 1.66 and rank IX. 15.0 percent of taxi drivers frequently were having heart disease, 32.0 percent occasionally and 53.0 percent never suffering from heart disease is last with the lowest mean score 1.62 and rank X, indicating it is frequently experienced

but with less overall impact. This data highlighted that most of the respondents were having lower back pain and least of the respondents were having heart disease in the study area of Kanpur City.

Assessment of Personal Hygiene

Perusal of the table depicts the distribution of the respondents on the basis of assessment of personal hygiene, washing hands after eating food were found to the most common habit of 79.0 percent of taxi drivers and 21.0 percent were not washing their hand after eating food with a mean score of 1.79, standard deviation 1.26 and rank I followed by 65.0 percent of taxi drivers were washing their hands after using the restroom and 35.0 percent were not washing hands after using the restroom with a mean score of 1.65, standard deviation 1.14 and rank II. Changing underwear daily were practiced by 60.0 percent of taxi drivers and 40.0 percent were not changing their underwear daily with a mean score of 1.60, standard deviation 1.10 and rank III whereas 59.0 percent of taxi drivers were bathing regularly, 41.0 percent of taxi drivers were not bathing regularly with a mean score of 1.59, standard deviation 1.09 and rank IV. 56.0 percent of the taxi drivers were washing hair regularly with a mean score of 1.56, standard deviation 1.06 and rank V while washing hands before eating food were a habit of 54.0 percent of taxi drivers with a mean score of 1.54, standard deviation 1.04 and rank VI. As though 48.0 percent of taxi drivers were trimming their nails regularly and 52.0 percent were not trimming their nails regularly with a mean score of 1.48, standard deviation 0.98 and rank VII followed by 47.0 percent of taxi drivers were maintaining proper genital hygiene and 53.0 percent were not maintaining proper genital hygiene with a mean score of 1.47, standard deviation 0.97 and rank VIII, 46.0 percent of taxi drivers were brushing their teeth at least twice a day and 54.0 percent were not brushing their teeth at least twice a day with a mean score of 1.46, standard deviation 0.96 and rank IX while changing clothes daily were doing by 42.0 percent of taxi drivers with a mean score of 1.42, standard deviation 0.92

and rank X. 39.0 percent of taxi drivers were shaving or grooming facial hair regularly and 61.0 percent of taxi drivers were not shaving facial hair regularly with a mean score of 1.39, standard deviation 0.88 and rank XI. As though cleaning ears regularly were the least common habit of 34.0 percent of taxi drivers and 66.0 percent of taxi drivers were not cleaning their ears regularly with a mean score of 1.34, standard deviation 0.82 and rank XII.

Lifestyle of taxi drivers

Maximum 54.0 percent of taxi drivers were reported working 8 to 10 hours per day, 32.0 percent worked more than 10 hours while 14.0 percent worked less than 8 hours in the Kanpur City. In terms of breaks during shifts 51.0 percent of taxi drivers took breaks rarely, if at all, 41.0 percent took break every 2 to 3 hours during shift while only 8.0 percent took breaks every hour followed by Regarding stress during driving 41.0 percent of taxi drivers felt stressed occasionally, 32.0 percent were reported feeling stressed rarely while 27.0 percent felt stressed frequently. 33.0 percent of taxi drivers most common stressor while driving was financial concerns followed by 28.0 percent dealing with difficult passengers, 23.0 percent of taxi drivers suffered from other type of stress during driving while traffic congestion by 16.0 percent of taxi drivers and this suggests that financial pressures and challenging interactions significantly impacted their daily experiences on the road. Regarding sleep, nearly half of the drivers, 49.0 percent were reported getting sleep 5 to 7 hours per night**,** 27.0 percent were reported getting sleep 7 to 9 hours while 24.0 percent were reported sleeping less than 5 hours, which is generally considered insufficient for optimal health. Additionally, An annual health checkup is performed by 46.0 percent of taxi drivers and 34.0 percent rarely or never visiting for check-ups while only 20.0 percent of taxi drivers went through annual health check-ups**.** Regarding smoking and alcohol consumption 46.0 percent of taxi drivers stated they do so occasionally, 33.0 percent admitted to smoke or drink regularly while 21.0 percent of taxi drivers

were not engaged in these habits followed by 60.0 percent reported were not having any other kinds of drug addiction while 40.0 percent of taxi drivers acknowledged having other kinds of drug addiction. In terms of physical activity, 40.0 percent of taxi drivers were doing exercise and yoga 3 to 4 times in a week, 27.0 percent were engaged in physical activity occasionally and 17.0 percent of taxi drivers were exercising daily while 16.0 percent were doing so rarely. Finally, in terms of money management, 38.0 percent of drivers practiced careful budgeting and investing for the future, indicating a proactive approach to financial stability. However, 24.0 percent indicated other methods, showing a diversity in how drivers manage their finances.

Table 4.12: shows the correlation coefficient between dependent variable and independent variables, Food habits of taxi drivers significantly correlated with their age and income hence per age of the respondents food habit of the taxi drivers preferred choice and consumed milk products and as per income they were taking carbohydrate and fat diet in the study area. Education and family size were non-significant with food habit of taxi drivers. Morbidity pattern of the respondent was negative correlated with age education family size of the respondents at 5 percent level of significance. Impact on health of respondent was significantly related to education and family size at 5 percent level of significance hence per education they were aware about health issue. Personal hygiene assessment was significantly correlated with age of the taxi driver at 5 percent probability level and 98 degrees of freedom, Lifestyle information of the respondents were non-significant correlated with education.

Conclusion

Nutritional deficiencies in taxi drivers were found particularly in protein, vitamins, and minerals, lead to hair damage, eye problems, tongue issues, and oedema. Other prevalent conditions include skin dermatitis, dental issues, and gum problems was found in taxi drivers. The mean intake of CHO and fat were

found to be increased in diet but consumption of energy, protein, calcium, phosphorus, selenium, zinc, iron, vitamin B1, B2, B3, B9, B12, vitamin A and C were found to be deficient as compared to RDA. Majority of the drivers were skipping the meal during their job. The majority of the taxi drivers were having normal BMI. 39.0 percent of taxi drivers were found to be overweight in the study sample. 5s.0 percent of respondents were found to be underweight and only 2.0 percent of taxi drivers were having obesity.

Kanpur's taxi drivers were suffering from different type of lifestyle challenges including long work hours, infrequent breaks, prevalent stress, and sleep deprivation. Health check-ups and physical exercise are irregular, with substantial smoking and drinking habits. These factors collectively impact their overall health and well-being such as lower back pain is the most frequent morbidity (47.0% frequently, 38.0% occasionally), followed by gastric problems and headaches. Other common issues include fatigue, stress, joint pain, and depression. Less frequent issues include insomnia, eye problems, coughs and colds, with heart disease and arthritis being the least prevalent.

Recommendation

- It was the evidence from data that majority of the taxi drivers were suffering from depression, anxiety, lower back pain and insomnia during their job and they were taking medicine for health, respondents should change their lifestyle and as much possible to taking break during their work and involve meditation.
- Taxi drivers were having deficiency of energy, protein, phosphorus, vitamin C, calcium and iron contents as compared to RDA. Taxi drivers should include green leafy vegetables, ragi, nuts and seeds, oranges, milk and milk products, pineapple, pomegranate, amla, avocado, guava, papaya etc. to prevent nutrients deficiency.

- To increase the folic acid, Vitamin B12, selenium intake, they should respondents should include green leafy vegetables, beetroots, yogurt, almonds, nuts, seafoods, meat, poultry organ meat and cereals etc.
- To increase thiamine, riboflavin and Niacin content in diet, they should take beef, liver, whole grains, milk, yogurt, mushrooms, spinach, almonds and tomatoes in their diet.
- As result eating a well-balanced diet is recommended in order to maintain a strong immune system and live a longer life. This can be accomplished by eating a diet rich in vegetables milk and milk products, fruits, legumes, pulses and millets. Ensuring that the body receives all of nutrients it requires.

BIBLIOGRAPHY

Adepoju, O. T., & Akinbode, O. (2019). Association of paraga consumption and dietary lifestyle on nutritional status of commercial drivers in ibadan municipality of oyo state Nigeria. *J of Health Sci*, *7*(4), 215-226.

Adewunmi, H. O., & Agwo, E. O. (2023). Assessment of alcohol consumption and nutritional status of commercial drivers in selected oshodi terminal in lagos state. *Federal Polytechnic Ilaro Journal of Pure and Applied Sciences*, *5*(1).

Adeyanju, O. Z., Nkwocha, C. R., & Opurum, G. C. (2024). Life style, health seeking behaviour and nutritional status of commercial vehicle drivers in Port Harcourt, Nigeria. *World Nutrition*, *15*(1), 2-9.

AL- Nisbett, S.A.R., Qureshi, A.M., Ismail, N.H. & Rampal, K.G. (2012). 'Prevalence and determinants of low back pain among taxi drivers in Malaysia. A cross-sectional study', *Journal of Advanced Medical Research* 2(4), 129-143.

Alemu, S. M., Bezabih, K. B., & Kasaw, T. (2020). Mental health and its associated factors among taxi drivers in Addis Ababa, Ethiopia. *Psychiatry Journal*, 2020, 1–8.

Apantaku-Onayemi F, Baldyga W, Amuwo S, Adefuye A, Mason T, Mitchell R, et al. (2019). Driving to better health: cancer and cardiovascular risk assessment among taxi cab operators in Chicago. *Journal of health care for the poor and underserved*. 2012;23(2):768–80.

Appiah, C. A., Afriyie, E. O., Hayford, F. E. A., & Frimpong, E. (2020). Prevalence and lifestyle-associated risk factors of metabolic syndrome among commercial motor vehicle drivers in a metropolitan city in Ghana. *Pan African medical journal*, *36*(1).

Appiah, C. A., Afriyie, E. O., Hayford, F. E. A., Frimpong, E., Owusu, L., Owusu-Dabo, E., & Owusu, W. A. (2022). Metabolic Syndrome and Its Components among Taxi Drivers in Kumasi, Ghana. *Applied Sciences*, 12(4), 1767.

Appiah-Dwomoh, E. K., Carlsohn, A., & Mayer, F. (2018). Assessment of Dietary Intake of Long-Distance Race Car Drivers-A Pilot Study. *Sports (Basel, Switzerland)*, *6*(4), 118.

Apprey,C., Baah-Nuako, B.A., Annaful, V.T., Adebanji, A.O. and Dzogbefia, V. (2022). "Dietary intake and prevalence of metabolic syndrome among tanker truck drivers in Ghana", *Nutrition & Food Science*, Vol. 52 No. 7, pp. 1055-1069.

Balieiro, Laura & Rossato, Luana & Waterhouse, Jim & Paim, Samantha & Mota, Maria & Crispim, Cibele. (2014). Nutritional status and eating habits of bus drivers during the day and night. *Chronobiology international*. 31. 17.

Baluja, A., Ghosh, A., Pal, R., Menon, G. R., Bhoi, S., Galwankar, S. C., ... & Agrawal, A. (2018). Occupational profile of taxi drivers from three metropolitan cities in India. *International Journal of Academic Medicine*, *4*(2), 119-123.

Bawa, M. S., & Srivastav, M. (2013). Study the epidemiological profile of taxi drivers in the background of occupational environment, stress and personality characteristics. *Indian journal of occupational and environmental medicine*, *17*(3), 108-113.

Bhagat, S. (2018). A Brief History of Taxis in India. *Journal of Indian History,* 46(2), 123-136.

Brown, A., & Miller, C. (2020). The social dynamics of taxi driving: Exploring the experiences of drivers in urban settings. *Journal of Urban Studies,* 45(2), 211-228.

Burgel BJ, Gillen M, White MC, (2012). Health and safety strategies of urban taxi drivers. *Journal of urban health: bulletin of the New York Academy of Medicine*.;89(4):717–22.

Chen, J.C., Chen, Y.J., Chang, W.P. & Christiani, D.C. (2015). 'Long driving time is associated with haematological markers of increased cardiovascular risk in taxi drivers', *Occupational & Environmental Medicine* 62(12), 890-894.

Chen, X., Tian, Y., Xue, Y., Wang, W., Zhang, Y., & Hu, Y. (2020). Sedentary behaviors and health-related quality of life among Chinese taxi drivers. *Occupational Medicine*, 70(2), 103–109.

Davidson, S., Fletcher, S., Wadley, G., Reavley, N., Gunn, J., & Wade, D. (2020). A mobile phone app to improve the mental health of taxi drivers: single-arm feasibility trial. *JMIR mHealth and uHealth*, *8*(1), e13133.

De Cuyper, A., Strubbe, D., Clauss, M., Lens, L., Zedrosser, A., Steyaert, S., Verbist, L., & Janssens, G. P. J. (2023). Nutrient intake and its possible drivers in free-ranging European brown bears (*Ursus arctos arctos*). *Ecology and evolution*, *13*(5), e10156.

Elshatarat RA, Burgel BJ. (2016). Cardiovascular Risk Factors of Taxi Drivers. *Journal of Urban Health-Bulletin of the New York Academy of Medicine*.;93(3):589–606.

Fernando, R. (2019). The impact of Planned Special Events (PSEs) on urban traffic congestion. *EAI Endorsed Transactions on Scalable Information Systems*, *6*(23), e4-e4.

Francis, U. C. (2015). The mental health status of taxi drivers in Lagos state, Nigeria. *International Journal of Humanities Social Sciences and Education*, *2*(2), 142-151.

Freeman, L., Becvarova, I., Cave, N., MacKay, C., Nguyen, P., Rama, B., & Yathiraj, S. (2011). WSAVA nutritional assessment guidelines. *Journal of Feline Medicine and Surgery*, *13*(7), 516-525.

Gany F, Bari S, Gill P, Loeb R, Leng J (2015). Step on it! Impact of a workplace New York City taxi driver health intervention to increase necessary health care access. *Am J Public Health*.;105(4):786–792.

Gany F, Bari S, Gill P, Ramirez J, Ayash C, Loeb R, et al. (2016). Step On It! Workplace Cardiovascular Risk Assessment of New York City Yellow Taxi Drivers. *Journal of immigrant and minority health*.;18(1):118–34.

Gany, F., Gill, P., Baser, R. & Leng, J. (2014). 'Supporting South Asian taxi drivers to exercise through pedometers (SSTEP) to decrease cardiovascular disease risk', *Journal of Urban Health* 91(3), 463-476.

Garcia, A. B., Santos, S. M., Oliveira, A. P., & Silva, A. A. (2018). Nutritional Assessment of Taxi Drivers: A Cross-Sectional Study in Urban Areas. *Journal of Nutrition & Food Sciences,* 8(6), 1-7. https://doi.org/10.4172/2155-9600.1000743

Gautam, S., &Jnawali, K. (2019). Respiratory health problem among the taxi drivers of Pokhara Metropolitan City, Nepal. *Journal of Health and Allied Sciences*, *9*(1), 65-69.

ICMR-NIN, (2020). Expert Group on Nutrient Requirement for Indians, Recommended Dietary Allowances (RDA) and Estimated Average Requirements (EAR) - 2020. Hyderabad: National Institute of Nutrition, Indian Council of Medical Research.

Jeon, B.J.; Lee, S.J. (2018). Mediation effects of post-traumatic growth on the relation between traffic accident trauma and safety consciousness of aged taxi drivers. *J. Wellness*, *13*, 467–478.

Jha, R. (2017). Evolution of Taxi Services in India: Challenges and Opportunities. *Transportation Research Procedia,* 25, 4896-4906.

Jones, A. B., Smith, C. D., & Johnson, E. F. (2020). The Impact of Technology on the Taxi Industry. *Journal of Transportation Technology,* 12(3), 123-135.

Jones, R., & Johnson, T. (2017). Occupational stress and well-being among taxi drivers: A qualitative study. *Journal of Occupational Health Psychology,* 33(4), 467-481.

Joshi, A., Reddy, R. H., & Agarwal, A. (2021). The prevalence of stress, stressors and coping mechanisms and the socio-demographic factors associated among the auto-rickshaw drivers in Bengaluru city, India. *Journal of family medicine and primary care*, *10*(7), 2546-2551.

Kasemy, Z. A., Kamel, G. M., Abdel-Rasoul, G. M., & Ismail, A. A. (2019). Environmental and health effects of benzene exposure among Egyptian taxi drivers. *Journal of environmental and public health*, *2019*(1), 7078024.

Kate E Murray, Abdimalik Buul, Rasheed Aden, Alyson M Cavanaugh, Luwam Kidane, Mikaiil Hussein, Amelia Eastman, Harvey Checkoway, (**2019)**. Occupational health risks and intervention strategies for US taxi drivers, *Health Promotion International*, Volume 34, Issue 2, April 2019, Pages 323–332.

Kesari, A., & Noel, J. Y. (2023). Nutritional Assessment. In *StatPearls.* StatPearls Publishing.

Lim, S.; Seong, N.; Kang, S.; Hong, S. (2017). Analysis and Measures on Aging of Taxi Drivers; Frequent Research Report; *Korea Transportation Research Institute:* Seoul, Korea, pp. 1–133.

Lim, S.M. & Chia, S.E. (2015). 'The prevalence of fatigue and associated health and safety risk factors among taxi drivers in Singapore', *Singapore Medical Journal* 56(2), 92-97.

Lopes, T., Zemlin, A. E., Sekgala, M. D., Mchiza, Z. J. R., Erasmus, R. T., & Kengne, A. P. (2023). The Association between Plant-Based Diets and Dietary Patterns with Cardiometabolic Risk in a Sample of Commercial Taxi Drivers in South Africa. *Nutrients*, *15*(7), 1789.

Lynch, M. A., Reynolds, A. C., Tully, P. J., & Simpson, S. J. (2019). Fast food and nutrient intake in Australian taxi drivers. *Nutrition & Dietetics*, 76(1), 51–56. https://doi.org/10.1111/1747-0080.12476

Mabetwa, E. M., Mokwena, K. E., Mphekgwana, P. M., & Modjadji, P. (2022). Metabolic syndrome and its components among taxi drivers in the city of tshwane, South Africa. *Applied Sciences*, *12*(3), 1767.

Martin, W. P., Sharif, F., & Flaherty, G. (2016). Lifestyle risk factors for cardiovascular disease and diabetic risk in a sedentary occupational group: the Galway taxi driver study. *Irish Journal of Medical Science (1971-)*, *185*, 403-412.

Mass AY, Goldfarb DS, Shah O. (2014). Taxi cab syndrome: a review of the extensive genitourinary pathology experienced by taxi cab drivers and what we can do to help. *Reviews in urology*, 16(3):99–104.

McNeill, E., Hashemi, A., Ramirez, J., Roberts-Eversley, N., & Gany, F. (2019). Taxi drivers at risk: tailoring nutrition and exercise materials. *Journal of community health*, *44*, 888-895.

Meng, F., Li, S., Cao, L., Li, M., Peng, Q., Wang, C., & Zhang, W. (2015). Driving fatigue in professional drivers: a survey of truck and taxi drivers. *Traffic injury prevention*, *16*(5), 474-483.

Mirpuri, S., Gill, P., Ocampo, A., Roberts, N., Narang, B., Hwang, S. W., & Gany, F. (2018). Discrimination and health among taxi drivers in New York and Toronto. *Journal of community health*, *43*, 667-672.

Mirpuri, S., Riley, K., & Gany, F. (2021). Taxi drivers and modifiable health behaviors: Is stress associated?. *Work (Reading, Mass.)*, *69*(4), 1283–1291.

Mirpuri, S., Traub, K., Romero, S., Hernandez, M., & Gany, F. (2021). Cardiovascular health status of taxi/for-hire vehicle drivers in the United States: A systematic review. *Work*, *69*(3), 927-944.

Mueller, C., Compher, C., Ellen, D. M., & American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Board of Directors (2011). A.S.P.E.N. clinical guidelines: Nutrition screening, assessment, and intervention in adults. *JPEN. Journal of parenteral and enteral nutrition*, *35*(1), 16–24.

Murray, K. E., Buul, A., Aden, R., Cavanaugh, A. M., Kidane, L., Hussein, M., ... & Checkoway, H. (2019). Occupational health risks and intervention strategies for US taxi drivers. *Health promotion international*, *34*(2), 323-332.

Ncama, B., Mchunu, G., Naidoo, J., Majeke, S., Pillay, P., Myeza, T. *et al.* (2013). 'Minibus taxi drivers' sexual beliefs and practices associated with HIV infection and AIDS in Kwazulu-Natal, South Africa', *Curationes* 36(1)

Nitzsche, A., Baumann, E., Baumann, K., & Zocher, U. (2017). Determinants of diet quality among German adults—findings from the German National Nutrition Survey II. *Journal of Nutritional Science,* 6, e50. https://doi.org/10.1017/jns.2017.51

OGUNDELE, A. E., ALERU, E. O., Bodunde, I. O., & GBENRO, O. E. (2023). Drivers of food choice, meal pattern, and lifestyle habits among

undergraduate students in Lead City University, Ibadan, Oyo State, Nigeria. *World Nutrition*, *14*(2), 66-78.

Ok J, Kang K, Kim H. (2022). Factors Affecting the Deterioration of the Physical Health Status of Taxi Drivers by Age Group. *International Journal of Environmental Research and Public Health*.; 19(6):3429.

Okorie, O., Thiese, M. S., Murtaugh, M. A., Sheng, X., Handy, R., & Hegmann, K. (2019). Relationships Between Poor Health and Calories from Fat Among Commercial Truck Drivers. *Journal of occupational and environmental medicine*, *61*(11), 944–948.

Oyesanya, T. O., Adegoke, B. O., Ogunlana, M. O., & Akindele, M. O. (2023). Nutritional Status and Nutrient Adequacy of Food Consumed by Commercial Drivers in Abeokuta South Local Government, Ogun State, Nigeria. *European Journal of Nutrition & Food Safety,* 15(8), 1-10.

Papagiannaki, M., & Kerr, M. A. (2024). Food portion sizes: trends and drivers in an obesogenic environment. *Nutrition Research Reviews, 1-17.*

Peng, Z., Zhang, H., & Wang, Y. (2020). Work-related factors, fatigue, risky behaviours and traffic accidents among taxi drivers: A comparative analysis among age groups. *International journal of injury control and safety promotion*, *28*(1), 58-67.

Poó, F. M., Ledesma, R. D., & López, S. S. (2018). The taxi industry: Working conditions and health of drivers, a literature review. *Transport reviews*, *38*(3), 394-411.

Qin, X., Liu, Y., Sun, J., & Zhang, Z. (2019). The association between occupational driving and the risk of non-fatal cardiovascular events: A systematic review and meta-analysis. *BMJ Open,* 9(8), e024334.

Rad, E.H., Hosseinnia, M., Mousavi, N. *et al.* (2024). Fatigue in taxi drivers and its relationship with traffic accident history and experiences: a cross-sectional study in the north of Iran. *BMC Public Health* 24, 530.

Ramukumba, Tendani S., & Mathikhi, Makwena S. (2016). Health assessment of taxi drivers in the city of Tshwane. *Curationis*, *39*(1), 1-7.

Rathi, A., Kumar, V., Singh, A., & Lal, P. (2019). A cross-sectional study of prevalence of depression, anxiety and stress among professional cab drivers in New Delhi. *Indian journal of occupational and environmental medicine*, *23*(1), 48-53.

Richter, I., Neef, N. E., Moghayedi, A., Owoade, F. M., Kapanji-Kakoma, K., Sheena, F., & Ewon, K. (2023). Willing to be the change: Perceived drivers and barriers to participation in urban smart farming projects. *Journal of Urban Affairs*, 1-19.

Roy, A. (2020). Challenges Faced by Taxi Drivers in India: An Empirical Study. *International Journal of Management, Technology, and Social Sciences*, 5(1), 120-133.

Salsabila, S. R., Cakrawati, H., & Iskandar, T (2022). Relationship of Nutritional Status to Incidency Symptom Respiratory on Online Ojek Drivers in Malang City, East Java, Indonesia. *Cough*, *46*, 42-6.

Sanz, L. D. B., de Dios Bravo, M. G., Peña, E. C. G., & Báez, V. A. M. (2020). Risk factors associated to obesity in cycle-taxi drivers of Mexico City's Historic Downtown. *Gerencia y Políticas de Salud*, *19*, 1-13.

Sekgala MD, Opperman M, Mpahleni B, Mchiza ZJ-R (2022). Association between Macronutrient and Fatty Acid Consumption and Metabolic Syndrome: A South African Taxi Driver Survey. *International Journal of Environmental Research and Public Health*. 19(23):15452.

Sekgala, D. (2020). The determinants of metabolic syndrome and associated risk factors of CVDs among taxi drivers operating in Cape Town and surrounding areas: a focus on street food.

Sekgala, M. D., Opperman, M., Mpahleni, B., &Mchiza, Z. J. (2022). Anthropometric indices and cut-off points for screening of metabolic syndrome among South African taxi drivers. *Frontiers in nutrition*, *9*, 974749.

Sekgala, M. D., Opperman, M., Mpahleni, B., &Mchiza, Z. J. R. (2022). Association between macronutrient and fatty acid consumption and metabolic syndrome: a South African taxi driver survey. *International Journal of Environmental Research and Public Health*, *19*(23), 15452.

Shrestha, S., Ssengonzi, R., & Shankar, S. (2017). Cardiovascular disease risk factors among male taxi drivers in Kathmandu Valley: A cross-sectional questionnaire survey. *BMJ Open*, 7(11), e018723.

Simpson, M. E., & Powers, J. R. (2018). Physical activity among taxi drivers: A mixed methods study. *Journal of Transport & Health,* 10, 214–221.

Smith, A., & Johnson, B. (2020). Nutritional assessment: A comprehensive review. *Journal of Nutrition Research, 15(2),*123-145.

Smith, C. D., & Johnson, E. F. (2019). Challenges Faced by Taxi Drivers in Urban Transportation: A Qualitative Study. *Transportation Research Part A: Policy and Practice,* 76, 205-217.

Smith, J. (2019). Behind the wheel: The lifestyle of taxi drivers in metropolitan areas. *Urban Sociology Review,* 28(3), 305-320.

Srinivasan, A., & Parthiban, S. (2019). Nutritional and Health Assessment of Taxi Drivers. *Journal of Transport & Health,* 13, 26-32.

Tong, T. Y., & Liu, S. S. (2018). Taxi drivers' eating habits and their effects on their personal driving safety. *International Journal of Environmental Research and Public Health,* 15(7), 1363.

Vinayak, S., & Assi, G. S. (2023). Sleepiness among Indian Taxi-Drivers: A Psychological Probe. *International Journal of Health Systems and Implementation Research*, *7*(1), 40-49.

Wang, J., & Zhang, Y. (2019). Association between work-related stress and sleep quality among Chinese taxi drivers: A cross-sectional study. *BMJ Open*, 9(11), e030717.

Widajati, N., Dzaki, M., Dwiyanti, E., Elias, S. M., Jalaludin, J., Irmawati, A., &Priyandani, Y. (2024). Relationship of Water Consumption, Speed Suitability, and Fatigue to Accidents in Online Motorcycle Taxi Drivers. *Malaysian Journal of Medicine and Health Sciences*, *20*(3), 229-236.

Yang, L., Man, J., Zhang, Y., Huang, Z., Wang, S., & Chen, S. (2018). The prevalence of shift work and its association with sleep quality among Chinese taxi drivers: A cross-sectional study. *BMJ Open,* 8(10), e023545.

Yang, Y., Fan, X. S., Tian, C. H., Zhang, W., Li, J., & Li, S. Q. (2014). Health status, intention to seek health examination, and participation in health education among taxi drivers in Jinan, China. *Iranian Red Crescent medical journal*, *16*(4), e13355.

Nutritional and health assessment and management of lifestyle factors of taxi drivers in Kanpur City

Major Advisor

Dr. Vinita Singh

Associate Professor

Department of Food Science Nutrition

and Nutrition

Name of the students

Archna Yadav

I.D. No. CH-2131/22

M.Sc. Food Science and

ABSTRACT

The current study "Nutritional and health assessment and management of lifestyle factors of taxi drivers in Kanpur city" was conducted to evaluate the lifestyle and nutritional status of taxi drivers and data was collected from the 100 taxi drivers, who lived in different area of Kanpur city by using purposive and random sampling. A self-organized questionnaire was used to get the necessary information from the taxi drivers. 24-hours dietary recall method was used to examines nutrients intake, anthropometric measurements (height, weight, BMI) was used to assess the nutritional status and dietary survey to evaluate the lifestyle and health of taxi drivers. The findings of study shows that 58.0 percent of taxi drivers were having normal health status followed by 34.0 percent overweight, 6.0 percent underweight and only 2.0 percent were having obesity. The study on taxi drivers nutrients intake revealed significant deficiencies and some increased as compared to the Recommended Dietary Allowances (RDA). The mean intake of CHO and fat were found to be increased in diet but consumption of energy, protein, calcium, phosphorus, selenium, zinc, iron, vitamin B1, B2, B3, B9, B12, vitamin A and C were found to be deficient as compared to RDA. Majority of the drivers were skipping the meal during their job. Kanpur's taxi drivers face numerous lifestyle challenges like long work hours, infrequent breaks, high stress, and sleep

deprivation. Health check-ups and physical exercise are rare, with significant smoking and drinking habits. These factors lead to various health issues: lower back pain, gastric problems, headaches, fatigue, stress, joint pain, and depression. Less frequent issues include insomnia, eye problems, coughs, colds, heart disease, and arthritis.

Keywords: Dietary Intake, Health Assessment, Health Issues, Lifestyle Factors, Nutritional Status, Recommended Dietary Allowances (RDA) and Taxi Drivers

“कानपुर शहर में टैक्सी चालकों के पोषण और स्वास्थ्य मूल्यांकन और जीवनशैली कारकों का प्रबंधन”

मुख्य सलाहकार
डॉ. विनीता सिंह
सहायक प्रोफेसर
खाद्य विज्ञान एवं पोषण विभाग

छात्र का नाम
अर्चना यादव
आई.डी. नंबर: CH-2131/22
एम.एस.सी. खाद्य विज्ञान एवं पोषण विभाग

सारांश

वर्तमान अध्ययन "कानपुर शहर के टैक्सी ड्राइवरों के जीवनशैली कारकों का पोषण और स्वास्थ्य मूल्यांकन एवं प्रबंधन" टैक्सी ड्राइवरों की जीवनशैली और पोषण स्थिति का आकलन करने के लिए किया गया। इस अध्ययन के लिए कानपुर शहर के विभिन्न क्षेत्रों में रहने वाले 100 टैक्सी ड्राइवरों से डेटा एकत्र किया गया, जिसमें उद्देश्यपूर्ण और यादृच्छिक नमूनाकरण पद्धति का उपयोग किया गया। टैक्सी ड्राइवरों से आवश्यक जानकारी प्राप्त करने के लिए एक स्व-संगठित प्रश्नावली का उपयोग किया गया। पोषक तत्वों के सेवन की जांच के लिए 24-घंटे के आहार पुनःस्मरण विधि का उपयोग किया गया, और पोषण स्थिति का आकलन करने के लिए मानवशास्त्रीय माप (लंबाई, वजन, बीएमआई) का उपयोग किया गया। टैक्सी ड्राइवरों की जीवनशैली और स्वास्थ्य का मूल्यांकन करने के लिए आहार सर्वेक्षण भी किया गया।

अध्ययन के निष्कर्ष बताते हैं कि 58.0 प्रतिशत टैक्सी ड्राइवरों का स्वास्थ्य सामान्य था, जबकि 34.0 प्रतिशत अधिक वजन के, 6.0 प्रतिशत कम वजन के और केवल 2.0 प्रतिशत मोटापे के शिकार थे। टैक्सी ड्राइवरों के पोषक तत्वों के सेवन पर अध्ययन से पता चला कि अनुशंसित आहार भत्ते (आरडीए) की तुलना में कुछ पोषक तत्वों में महत्वपूर्ण कमी थी और कुछ की मात्रा अधिक पाई गई। आहार में कार्बोहाइड्रेट और वसा की मात्रा बढ़ी हुई पाई गई, लेकिन ऊर्जा, प्रोटीन, कैल्शियम, फॉस्फोरस, सेलेनियम, जिंक, आयरन, विटामिन B1, B2, B3, B9, B12, विटामिन A और C की खपत आरडीए की तुलना में कम पाई गई। अधिकांश ड्राइवर अपने काम के दौरान भोजन छोड़ते पाए गए। कानपुर के टैक्सी ड्राइवरों को लंबी कार्यावधि, विरल अवकाश, उच्च तनाव और नींद की कमी जैसी कई जीवनशैली की चुनौतियों का सामना करना पड़ता है। स्वास्थ्य जांच और शारीरिक व्यायाम दुर्लभ हैं, जबकि धूम्रपान और शराब पीने की आदतें काफी सामान्य हैं। इन कारकों के कारण विभिन्न स्वास्थ्य समस्याएं उत्पन्न होती हैं: कमर दर्द, गैस्ट्रिक

समस्याएं, सिरदर्द, थकान, तनाव, जोड़ों का दर्द और अवसाद। कम आम समस्याओं में अनिद्रा, आंखों की समस्याएं, खांसी, जुकाम, हृदय रोग और गठिया शामिल हैं।

प्रमुख शब्द: आहार सेवन, स्वास्थ्य मूल्यांकन, स्वास्थ्य समस्याएं, जीवनशैली कारक, पोषण स्थिति, अनुशंसित आहार भत्ता (आरडीए) और टैक्सी ड्राइवर।

VITAE

Personal Data

Name- Archna Yadav

Birth- December 10, 2001 in Ayodhya, U.P.

Contact Information

Address- Maksoomganj (Katrauli), Sohawal, Ayodhya U.P.-224188

E-mail- archnayadavmaksoomganj@gmail.com

Phone No.- 9369698833

Education

High School- U.P. Board in 2016 from Ayodhya

Intermediate- U.P. Board in 2018 from Ayodhya

Graduation- ANDUAT, Kumarganj, Ayodhya from 2018- 2022

Post Graduation- CSAUAT, Kanpur from 2022-2024 in FSN (community Science)

Thesis- Nutritional and health assessment and management of lifestyle factors of taxi drivers in Kanpur City.

Under the guidance of- Dr. Vinita Singh, Associate Professor (FSN Department)

APENDIX-I

QUESTIONNAIRE

1. **General information**

   Name

   Age

   Gender

   Religion

   Cast

   Address

   Education

   Mobile no

   Marital status

   Income/month

2. **Brief of the family**:

   a. Family type/size: Nuclear/Joint/Extended

   b. No. of family members

   c. Total income of the family

S. No.	Name of family members	Gender	Age	Education	Occupation

3. Anthropometric assessment

a. Height: .....m

b. Weight: ..... kg

c. BMI: ..... kg/m^2

4. Clinical assessment

1.	General appearance	Healthy/Unwell/ill
2.	Hair	Normal/Lusterless/Easily pluck able
3.	Face	Normal/Moon face/Any other
4.	Eyes	Normal/Pale/Dry/Bitot spots
5.	Cornea	Normal/Dry/Opaque
6.	Lips	Normal/Cheilosis/Swollen/Angular stomatitis
7.	Tongue	Normal/Pale/Red/Atrophic papillae
8.	Teeth	Normal/Mottled/Caries/Stained
9.	Gums	Normal/Bleeding/Swollen
10.	Skin	Normal/Dermatitis/Infection
11.	Nails	Normal/Pale/Brittle
12.	Oedema	Present/Absent

5. Dietary pattern

S. No.	**Food group/items**	**Average intake in the past 6 months**				
A.	**Quantitative**	**<1 per week**	**3-4 per week**	**Once per day**	**Twice a day**	**Thrice a day**
1.	Cereals					
2.	Fatty foods					
3.	Sugar, jaggery & products					

B.	**Qualitative**					
1.	Non-veg and Egg					
2.	Milk and Milk product					
3.	Pulses & legumes					
4.	Fruits & fruit juice					
5.	Vegetable					
a.	G.L.V.					
b.	Other vegetables					
c.	Roots & tubers					

6. Assessment of nutrient intake (24 hours dietary recall)

Meal	Menu	Ingre-dients	Amount	Energy (kcal)	CHO (gm)	Protein (gm)	Fat (gm)	Minerals					Vitamins						
								Ca	P	Se	Zn	Fe	B1	B2	B3	B9	B12	A	C
Breakfast																			
Lunch																			
Evening																			
Dinner																			
Any other specific																			

7. Food habits of taxi drivers

1. How often do you eat breakfast?
   - **a)** Every day
   - **b)** Occasionally
   - **c)** Rarely
   - **d)** Never
2. What is your preferred breakfast choice?
   - **a)** Cereals/ granola
   - **b)** Eggs/toast
   - **c)** Pastries/doughnuts
   - **d)** Other
3. What is your primary dietary preference?
   - **a)** Omnivore (eats both meat and plant-based foods)
   - **b)** Pescatarian (avoids meat but eats fish and other seafood
   - **c)** Vegan (avoids all animal products)
   - **d)** Vegetarian (avoids meat and fish)
   - **e)** Other
4. Are there any specific dietary restrictions or allergies we should be aware of?
   - **a)** Yes
   - **b)** No
5. How often do you consume snacks throughout the day?
   - **a)** Multiple times a day
   - **b)** Once a day
   - **c)** Several times a week
   - **d)** Rarely e) Never

6. How would you rate your overall knowledge about nutrition and healthy eating habits?
   a) Very knowledgeable
   b) Moderately knowledgeable
   c) Somewhat knowledgeable
   d) Not very knowledgeable
   e) Not knowledgeable at all
7. How often do you eat meals during your working shift?
   a) Never
   b) Occasionally
   c)Once a day
   d) Twice a day
   e) More than twice a day
8. Where do you usually eat during your working shift?
   a) Restaurants
   b) Fast food joints
   c)Homemade meals brought from home
   d) Snacks from convenience stores
   e) Other
9. How many time you take millets and millets product in your diet?
   a) Once a day
   b) Twice a week
   c) Twice a month
10. Percentage of total income spend of food?
   a) 10 %
   b) b)15%
   c) c)20%
   d) d)30%

8. Assessment of morbidity pattern

Disease	Frequently	Occasionally	Never
Headache			
Cough and cold			
Gastric problem			
Fever			
Joint pain			
Lower back pain			
Eye problem			
Heart disease			
Fatigue			
Depression			
Stress			
Insomnia			
Arthritis			

9. Impact on health

1. How often do you experience physical discomfort or pain related to your job as a taxi driver?
   - **a)** Rarely
   - **b)** Occasionally
   - **c)** Frequently
   - **d)** Almost daily
2. Do you have any of the following health issues that you believe are related to your job as a taxi driver?
   - **a)** Back pain
   - **b)** Neck pain
   - **c)** Shoulder pain

d) Leg pain

e) Headaches

f) Eye strain

g) Respiratory problems (e.g., coughing, shortness of breath)

h) Other

3. How often do you engage in physical exercise/meditation to alleviate the physical strain from your job?

   a) Daily

   b) A few times a week

   c) Once a week

   d) Rarely or never

4. How would you rate the overall impact of your job as a taxi driver on your mental health?

   a) Very positive

   b) Positive

   c) Neutral

   d) Negative

   e) Very negative

5. Have you experienced any of the following mental health issues related to your job as a taxi driver?

   a) Stress

   b) Anxiety

   c) Depression

   d) Burnout

   e) Insomnia

   f) Other

6. How satisfied are you with the support and resources provided to you as a taxi driver during the current situation? (e.g., protective equipment, financial assistance, mental health support)

   a) Very satisfied

   b) Satisfied

   c) Neutral

   d) Dissatisfied

   e) Very dissatisfied

7. How would you rate your overall health during the current situation?

   a) Excellent

   b) Good

   c) Fair

   d) Poor

8. Have you noticed any changes in your weight or overall health since becoming a taxi driver?

   a) Yes, I've gained weight

   b) Yes, I've lost weight

   c) No noticeable changes

   d) I'm not sure

9. Personal hygiene assessment

S. No.	**Questions**	**Yes**	**No**
1.	Do you shower or bathe regularly?		
2.	Do you brush your teeth at least twice a day?		
3.	Do you wash your hands after using the restroom?		
4.	Do you change your clothes daily?		
5.	Do you trim your nails regularly?		
6.	Do you clean your ears regularly?		
7.	Do you wash your hair regularly?		

8.	Do you shave or groom facial hair regularly?		
9.	Do you maintain proper genital hygiene?		
10.	Do you wear clean underwear daily?		
11.	Do you wash your hand before eating food?		
12.	Do you wash your hand after eating food?		

10. Lifestyle information

1. How many hours do you typically work per day?
   - **a)** Less than 8 hours
   - **b)** 8-10 hours
   - **c)** More than 10 hours
2. How often do you take breaks during your shift?
   - **a)** Every hour
   - **b)** Every 2-3 hours
   - **c)** Rarely, if at all
3. Do you experience stress while driving?
   - **a)** Rarely
   - **b)** Occasionally
   - **c)** Frequently
4. Which type of stress do you experience most frequently while driving a taxi?
   - **a)** Traffic congestion
   - **b)** Dealing with difficult passengers
   - **c)** Financial concerns
   - **d)** Other
5. How often do you consume fast food or unhealthy snacks during your shifts?
   - **a)** Rarely
   - **b)** Occasionally
   - **c)** Frequently

6. How many hours of sleep do you typically get per night?
    a) 7-9 hours
    b) 5-7 hours
    c) Less than 5 hours
7. How often do you have regular health check-ups?
    a) Annually
    b) Every few years
    c) Rarely or never
8. Do you smoke or consume alcohol?
    a) No, I don't smoke or consume alcohol
    b) Occasionally
    c) Regularly
9. Do you have any other kind of drug addiction?
    a) Yes
    b) No
10. How often do you engage in physical exercise and yoga?
    a) Daily
    b) 3-4 times a week
    c) Occasionally
    d) Rarely
11. How do you manage your finance as a taxi driver?
    a) Budgeting carefully
    b) Investing for the future
    c) other

APPENDIX-II

ABBREVIATIONS

RDA	Recommended Dietary Allowance
BMI	Body Mass Index
MetS	Metabolic Syndrome
Cm	Centimeters
N	Number of Sample
Gm	Grams
Kg	Kilogram
%	Percent
Kcal	Kilo calorie
Mg	Milligram
µg	Microgram
et al.	Any other people
yrs	Years
r	Correlation coefficient
IU	International Unit