



Impact of a Dietitian-Designed Meal Program on the Health and Wellbeing of Truck Drivers and Warehouse Workers: A Study in Collaboration with Healthy Heads in Trucks and Sheds

Introduction:

Truck drivers and warehouse workers often face unique challenges related to diet, exercise, and overall health due to the demanding nature of their jobs. Limited access to nutritious meals, long hours, and sedentary lifestyles contribute to poor health outcomes in these populations. Be Fit Food, in collaboration with Healthy Heads in Trucks and Sheds, conducted a six-week intervention to address these challenges by providing dietitian-designed meals and personalised dietary support to a group of truck drivers and warehouse workers.

This study's main objective was to assess whether the structured meal program could lead to improvements in key health markers such as body weight, blood pressure, cholesterol, and blood sugar levels. Additionally, the study aimed to evaluate the program's effects on participants' mood, energy levels, and overall well-being.

Methods:

Participants: A total of 20 participants were recruited for the study, including 10 employees from Australia Post and 10 from Linfox. Participants were either truck drivers or warehouse workers. Inclusion criteria required participants to engage in their usual work routines while following the dietary program.

Intervention: We provided the participants with a six-week supply of healthy, dietitian-designed meals at no cost. The meals included four to twelve vegetables per serving, high-quality protein, and healthy fats to support gut microbiome health. We provided the participants with two meals per day for five days a week (totalling ten meals per week) and two healthy snacks per day for five days a week. The participants were also required to participate in two nutrition education workshops which aimed to improve their knowledge of healthy eating.

Dietitian Support: Participants met with a dietitian at the beginning of the program to discuss their nutritional needs, receive meal guidance, and place their orders. They were also required to attend four 15-minute consultations with the dietitian via phone over the program. These sessions provided ongoing support and ensured adherence to the dietary guidelines.

Obligations and Assessments: We asked the participants to complete several assessments before and after the intervention, including a survey, a questionnaire, and a medical examination. The medical assessments covered key health markers such as blood pressure, cholesterol levels, blood sugar levels, and body weight. Participants were also asked to fill out pre- and post-program questionnaires to evaluate changes in mood, energy levels, and overall wellbeing.

Confidentiality: All personal information was kept confidential, and participants were not personally identified in any reporting or data.

Potential Benefits: While no guarantees were made regarding the benefits of the program, participants were informed that they might experience improvements in health, including better mood, increased alertness, higher energy levels, and potential decreases in weight and health markers such as cholesterol, blood sugar, and blood pressure.

Results

Dropout and Compliance Rates:

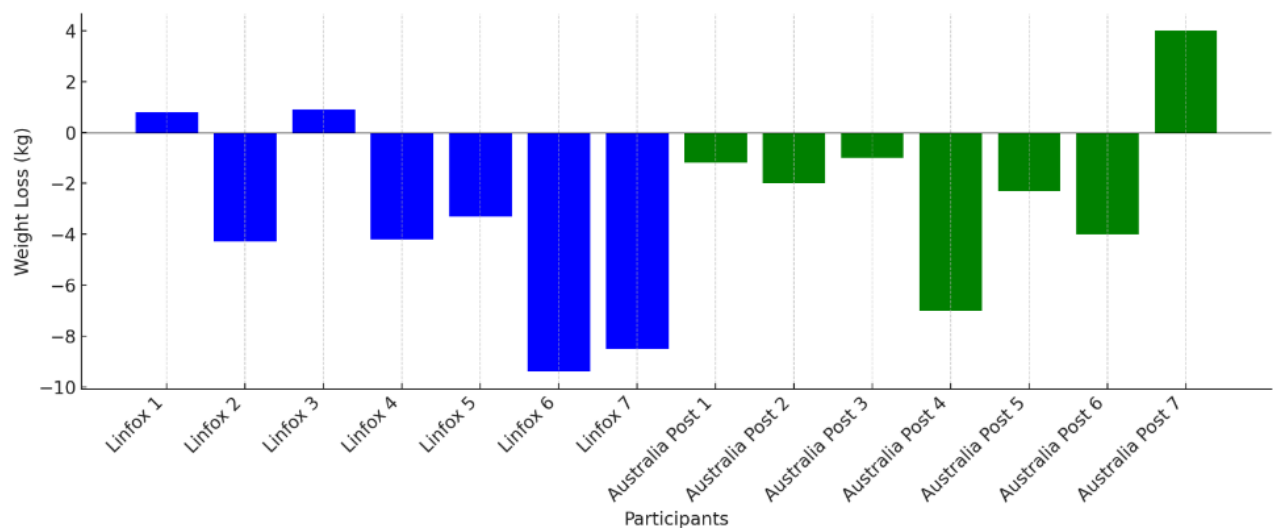
Out of the twenty participants who initially enrolled in the program, two dropped out, resulting in a dropout rate of 10%. Among the eighteen participants who completed the program, fourteen were compliant with the dietary guidelines. However, four participants exhibited non-compliance. Reasons for non-compliance included difficulties in adhering to the meal plan due to job-related constraints, personal preferences or dietary restrictions not fully aligned with the provided meals, or challenges in maintaining consistent communication with the dietitian.

Medical Outcomes:

The changes in participants' health markers from pre- to post-intervention are summarised as follows:

Weight and BMI:

- Linfox Participants: On average, participants lost 4.00 kg, resulting in a BMI decrease of 1.04. The median weight loss for this group was 4.2 kg (range -9.4 to +0.9 kg)
- Australia Post Participants: Participants in this group lost an average of 2.26 kg, with a corresponding decrease in BMI of 0.65. The median weight loss for this group was 2.3 kg (-7 to +4 kg).
- Total: Across all participants, the average weight loss was 3.28 kg, with a median weight loss of 3.65 kg (range -9.4 to +4 kg). The average percentage body weight loss was 3.03% (-10.14 to +3.42%), with 22.2% of participants achieving weight loss of 4.6% or higher.



Graph 1: Weight Loss Results: Linfox vs Australia Post Participants

Blood Pressure:



- **Linfox Participants:** The group experienced an average increase in systolic blood pressure (+1.88/1.50 mm Hg), with a range of +18/16 mm Hg to -11/9 mm Hg. However, one participant showed a significant improvement in blood pressure (-17 mm/16 mm Hg).
- **Australia Post Participants:** This group saw an average decrease in both systolic blood pressure (+3.50/3.83 mm Hg), with a range of +3/0 mm Hg to -13/11 mm Hg. One participant had a notable reduction in blood pressure (-13/6 mm Hg).
- **Total Average:** The overall average change in blood pressure was -0.43/0.79 mm Hg and range was +18/16 mm Hg to -13/11 mm Hg.

Waist and Hip Circumference:

- **Linfox Participants:** The group experienced an average decrease in waist circumference by 0.78 cm and an increase in hip circumference by 1.22 cm, with a range of +6 to -7 cm for waist circumference and +6 to -2.5 cm for hip circumference. One participant showed a reduction in waist circumference by 7 cm.
- **Australia Post Participants:** This group had a decrease in waist circumference by 2.36 cm and in hip circumference by 4.71 cm, with a range of +9 to -11 cm for waist circumference and +7 to -20 cm for hip circumference. The most significant reduction in waist and hip circumference was 10.5 cm and 20 cm, respectively.
- **Total Average:** Across all participants, waist circumference decreased by 1.47 cm (range +9 to -11 cm), and hip circumference by 1.38 cm (range +7 to -20 cm).

HbA1c and Lipid Profile:

- **Linfox Participants:** The average change in HbA1c was a decrease of 0.07 mmol/mol, with minor decreases in total lipids (0.10 mmol/L), HDL (0.02 mmol/L), and triglycerides (0.18 mmol/L). One participant exhibited a notable decrease in LDL by 1.2 mmol/L.
- **Australia Post Participants:** There was an average increase in HbA1c by 0.03 mmol/mol, with increases in total lipids (0.14 mmol/L), HDL (0.04 mmol/L), and triglycerides (0.26 mmol/L). One participant showed a decrease in total lipids by 1.2 mmol/L and LDL by 1.1 mmol/L.
- **Total Average:** The overall average change showed a slight decrease in HbA1c by 0.03 mmol/mol, an increase in total lipids by 0.03 mmol/L, an increase in HDL by 0.01 mmol/L and an increase in LDL by 0.06 mmol/L.

Liver Function:

- Liver function tests remained within normal ranges for most participants, with some reporting minor improvements. Two participants showed notable improvements in their liver function, moving from slightly abnormal to within normal ranges.

Survey Results:

Four out of eighteen participants completed both the pre and post survey for the program.

- **Health Knowledge and Compliance:** Of the four participants who completed both pre- and post-program surveys, three participants reported an improvement in their knowledge of healthy eating, rating their



knowledge from "Fair" to "Good." Three participants indicated they were mostly compliant with the program, while one reported full compliance.

- **Health Markers and Physical Activity:** Two of four participants noted improvements in their health markers, and two also reported an increase in their level of physical activity. All four participants stated that they adhered to their exercise program throughout the intervention.
- **Energy Levels and Well-being:** One participant experienced an improvement in energy levels, shifting from low to moderate energy. Three participants felt they had achieved their health goals and noticed positive changes in their overall well-being. Additionally, three participants reported an improvement in their levels of fatigue, and one participant rated their frequency of feeling depressed lower after the program.
- **Valuable Insights Gained:** Participants highlighted that the most valuable insights gained from the program included understanding the importance of eating smaller meals, recognising the types of foods that make them feel better, and improving their eating habits.

Discussion

The results of this study reflect positive changes in several key health markers among the participants, although the degree of improvement varied between the Linfox and Australia Post groups.

Weight and BMI: The reduction in weight and BMI was one of the most significant outcomes of the intervention. Some participants demonstrated significant weight loss, leading to a substantial reduction in BMI. The average weight loss across both groups suggests that the dietitian-led meal program was effective in promoting a caloric deficit, which is essential for weight management. These improvements are crucial, as reducing BMI is associated with a decreased risk of obesity-related diseases. It is important to note that even modest weight loss, such as 5–10% of initial body weight, has been shown to significantly reduce cardiovascular disease risk, even when the individual remains within the obese range [1]. This is supported by substantial evidence, leading current guidelines to recommend a 5–10% weight loss as an initial target to achieve health benefits [2]. In this study, the average percentage body weight loss was 3.03% (ranging from -10.14% to +3.42%), with 22.2% of participants achieving a weight loss of 4.6% or higher. These results, while slightly below the recommended target, still demonstrate meaningful progress in weight management, particularly for those participants who approached or exceeded the 5% weight loss threshold. This suggests that the dietitian-led intervention was effective in promoting health benefits associated with weight reduction, although there is potential for further improvements in future programs.

Several participants noted the adjustment to smaller portion sizes and the benefits they experienced as a result. As one participant mentioned:

“The food’s actually pretty good! The smaller sizes you get used to. I can see how much I’ve been overeating now. And you really don’t need all the carbs and pasta and rice. My body feels a lot better for it.”

This reflects the program’s success in helping participants manage portion control and make healthier dietary choices.

Blood Pressure: Although the Linfox group saw a slight average increase in blood pressure, the Australia Post group overall showed improvements in blood pressure, which is encouraging, particularly for those with pre-



existing hypertension. The overall average change in blood pressure was modest at $-0.43/0.79$ mm Hg, with a range from $+18/16$ mm Hg to $-13/11$ mm Hg. Notably, three participants achieved a reduction in systolic blood pressure of over 10 mm Hg, and six participants achieved a reduction of over 8 mm Hg. These results are significant when considering the broader implications of blood pressure reduction on cardiovascular health. Research has demonstrated that a 10 mm Hg reduction in systolic blood pressure is associated with a 20% reduction in the risk of major cardiovascular disease events, a 17% reduction in coronary heart disease, a 27% reduction in stroke, a 28% reduction in heart failure, and a 13% reduction in all-cause mortality [3]. The reductions achieved by participants in this study, particularly those who met or exceeded the 10 mm Hg threshold, underscore the potential for meaningful cardiovascular risk reduction through dietary interventions.

Waist and Hip Circumference: The changes in waist and hip circumference reveal shifts in fat distribution due to the intervention. The most significant reductions in waist circumference are particularly impressive, as abdominal fat is associated with metabolic risk factors such as insulin resistance and cardiovascular disease. The overall reduction in waist circumference across both groups suggests a favourable shift away from visceral fat accumulation, which is associated with a higher risk of chronic diseases [4]. One participant noted:

“My clothes feel like they’re fitting better. I’m definitely eating less junk and not eating the pies and soft drinks I used to. It’s been a good kickstart for eating better and living a healthier life,”

underscoring the program’s impact on promoting healthier eating habits and reducing body fat.

HbA1c and Lipid Profile: The slight decrease in HbA1c among the Linfox participants indicates an improvement in blood sugar control, which is crucial for reducing the risk of diabetes-related complications. The increase in energy reported by participants suggests improved metabolic health, which is also crucial for managing these markers. Additionally, some participants showed reductions in LDL cholesterol, which is associated with a decreased risk of atherosclerosis and heart disease [5]. However, the overall increase in lipid levels among the Australia Post group suggests that while weight loss and waist reduction were achieved, some participants might require additional dietary modifications or interventions to better manage their lipid profiles.

Liver Function: Improvements in liver function among certain participants are indicative of the positive impact of the diet on overall liver health. Given the close link between liver function and metabolic health, these improvements suggest that the intervention may also reduce the risk of non-alcoholic fatty liver disease (NAFLD), which is common in populations with high levels of obesity and sedentary behaviour.

Health Knowledge and Physical Activity: The survey results indicated that three out of four participants improved their knowledge of healthy eating, and all participants adhered to their exercise routines. This improvement in health literacy and physical activity levels is crucial for sustaining long-term health benefits [6]. Participants expressed that understanding the types of foods that make them feel better and the importance of portion control were key takeaways from the program.

Energy Levels and Well-being: Three participants reported positive changes in their well-being, with one noting an improvement in energy levels from low to moderate. This testimonial further reinforces these improvements:

“I’m not sure if I’ve lost any weight but I do think my clothes are fitting more loosely. I definitely think I have more energy though, that’s been the biggest change.”



Improved energy levels and reduced fatigue among participants are significant, as these factors can enhance overall quality of life and support continued engagement in healthy behaviours [7].

Conclusion

This study highlights the potential benefits of a structured, dietitian-led meal program for truck drivers and warehouse workers, with significant improvements observed in weight, BMI, blood pressure, and waist circumference. The results suggest that, for some participants, the intervention led to substantial health benefits, particularly in reducing metabolic and cardiovascular risk factors.

Future interventions could explore the integration of physical activity and extended program duration to maximise health benefits and achieve sustained improvements over time. The success of certain participants illustrates the potential for significant health gains through targeted nutritional interventions in these high-risk populations.

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