Dietary Intake Changes of My Body Fit and Fabulous (MyBFF) at Work: A Study of Workplace Intervention to Combat Obesity

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Outlines

- Introduction
- Aim
- Methods
- Results
- Conclusion
Introduction

• Obesity is an alarming public health issues

• Various reports in the 1990s have pointed out prevalence of overweight of over 20% and obesity of over 5% amongst urban population groups of the more developing countries in Asian (Tee 2002)

• The trend of overweight and obesity in Malaysia were increasing with prevalence 47.7% (NHMS 2015)
Introduction

• The change in overweight and obesity prevalence in some Asian countries in comparison to the United States, 1980-2013

Source: Institute of Health Metrics and Evaluation, 2014

• Overweight and obesity prevalence 2013

Source: Institute of Health Metrics and Evaluation, 2014
Introduction

• Obesity is associated with increase risk of cardiovascular and metabolic disease (Thorndike 2015, Cheong 2014)
  • Diabetes Mellitus
  • Hypertension
  • Dyslipidaemia
  • Stroke
  • Nephropathy

• Asians are more likely to develop central obesity, which is associated with higher risk of developing those diseases (Cheong 2014)
Why workplace

• Obesity among workers
  • Prevalence of obesity among government and semi government employees in Malaysia were 40.3% compare to 26.6% among private employees (NHMS 2015)

• Obesity generates indirect costs for employers by increasing workers’ compensation claims, related lost work days, absenteeism and presenteeism (Heinen & Darling 2009)

• Need to focus on workplace environment and propose for workplace program
  • Education, modification and self-monitoring of dietary intake and physical activity (French et. al. 2010)
Weight loss program

• The economic and health impacts of employer-sponsored health promotion and wellness is growing
  (Heinen & Darling 2009)

• Worksite interventions have been found to be effective in controlling overweight and obesity
  • Combine nutrition and physical activity
  (Thorndike 2011, MOH 2015)
Background

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My Body is Fit and Fabulous (MyBFF@work): An Intervention Project to Combat Obesity Among Malaysian Civil Servants in Kelantan

- Conducted in Kota Bharu, Kelantan, Malaysia.
- Researchers from Universiti Sains Malaysia, Health Campus and Kelantan State Health Department
- Principal Investigator: Prof. Wan Abdul Manan Wan Muda
Background

• **Phase 1 – Qualitative and baseline survey**
  • A cross sectional study was implemented through surveys of worksite administrators and employees, and/or an assessment of the worksite and surrounding community environments to determine areas conducive to environmental interventions.
  • Also identify barriers to implementing the intervention including factors that could enhance participation of employees in the intervention through qualitative study.
  • Screening for baseline (pre-intervention) for intervention and control groups will include 4 measures, namely:
    • Socio demography and health problems
    • Pain score
    • Weight, height, and waist circumference
    • Physical activity history
    • Dietary intake/binge eating/night eating behavior
Dietary Intake Changes of My Body Fit and Fabulous (MyBFF) at Work

- Phase 2 – Intervention and Qualitative Study (embedded)

Aim:
- To assess the dietary intake changes among overweight and obese government employees in Kota Bharu, Kelantan
Methodology

• This intervention study focused on healthy lifestyle approach through nutrition education and dietary modification

• It involved 16 Government Agencies (Federal and State) in Kota Bharu, Kelantan

• The post intervention result was obtained after 6 months completing the intervention program
Inclusion criteria

- BMI > 27.0 kg/m²
- Age 18 to 59 years old
- Fit and healthy
- Agree to abide the study procedures and protocol, signed the informed consent forms

Exclusion criteria

- Involvement in any commercial weight reducing program
- Taking any medication/food/herb products for weight reduction
- Pregnancy or planning to conceive during the study duration
Methodology

• 24 hrs diet recall is used to measure energy and macronutrients intake were measured using.
  • Record the details of food and beverages in standard household measurements using food diary.
  • Portion standard measurements were converted into grams and then calculated using the Nutritionist Pro Software.
Methodology

• The respondents were randomly selected and grouped into 3 main groups:
  • Meal Replacement (MR)
  • Portion Size (PS)
  • Control (CON)
MYBFF Education Module

Bab 1:
Kenali Diri Kita
Rohana Abdul Jalil

Bab 2:
Penyakit-Penyakit Tidak Berjangkit
Wan Muhd Izani Wan Mohamed

Bab 3:
Panduan Diet Malayula
Tengku Fatimah Tengku Hassim

Bab 4:
Makan Untuk Sihat
Tengku Fatimah Tengku Hassim

Bab 5:
Merancang Pengambilan Kalori Harian
Wan Suriati Wan Nik

Bab 6:
Mulai Hidup Dengan Sarapan
Wan Suriati Wan Nik

Bab 7:
Sarana dan Cara Mencapai
Wan Suriati Wan Nik

Bab 8:
Membantu Dengan Bajak
Noor Fadzilah Hamid

Bab 9:
Hidup Sehat Sesuai Masyarakat
Tengku Fatimah Tengku Hassim

Bab 10:
Makan Sihat di Luar
Mohd Ismail Ibrahim
Meal Replacement (MR) Group

- Provide lunch delivery for 5 working days
- Replace one meal of white rice-based with non-white rice based
  - Only brown rice will be provided
Meal Replacement

• 50 recipes were compiled by nutritionist team
• Nutritional values were calculated
  • Energy values of the meals ranged from 427.7 kcal to 575.8 kcal
### Examples Menu for MR group during 6 months intervention

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Mushroom burger</td>
<td>Grill chicken salad with spicy baked potato</td>
</tr>
<tr>
<td>Grill chicken with oat rice</td>
<td>Grill Thai chicken with brown rice and vegetables</td>
</tr>
<tr>
<td>Spaghetti aglio olio</td>
<td>BBQ grill chicken with brown rice</td>
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<tr>
<td>Sandwich meatball</td>
<td>Dory fish casserole</td>
</tr>
<tr>
<td>Chicken in Thai mayo with pita bread</td>
<td>Spaghetti pizza with chicken cake</td>
</tr>
<tr>
<td>Yong chow fried brown rice</td>
<td>Asam pedas</td>
</tr>
<tr>
<td>BBQ mince beef brown rice</td>
<td>Steam dory with brown rice</td>
</tr>
<tr>
<td>Pan fried dory with little shell pasta</td>
<td>Chicken kerutuk and oat rice</td>
</tr>
<tr>
<td>Baked Pattaya brown rice</td>
<td>Vinegar fish with oat rice</td>
</tr>
<tr>
<td>Beef steak whole meal sandwich</td>
<td>Spaghetti soto</td>
</tr>
<tr>
<td>Roasted paprika chicken with corn on cob and assorted vegetables</td>
<td>Beef brown rice</td>
</tr>
<tr>
<td>Chicken enchiladas wrap with whole meal tortillas</td>
<td>Pizza rendang</td>
</tr>
</tbody>
</table>
Portion Size (PS) Group

• Reduce portion size of regular food intakes/meals by using “Portion Plate”
  • Lunch taken following the portion plate
Control group

- No intervention
- Basic health and nutrition education – Monthly
Result: Dietary intake differences means in a 6 months

A total of 283 participants were recruited with 38.2% of dropouts.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean (SD)</th>
<th>F statistic (df)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy intake differences (kcal/d)</td>
<td>MR (n=70)</td>
<td>-94.0 (510.28)</td>
<td>0.07 (2,168)</td>
<td>0.932</td>
</tr>
<tr>
<td></td>
<td>PS (n=56)</td>
<td>-99.1 (490.57)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CON (n=49)</td>
<td>-130.5 (621.16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total carbohydrate differences (g/d)</td>
<td>MR (n=70)</td>
<td>-20.2 (74.68)</td>
<td>1.17 (2,168)</td>
<td>0.313</td>
</tr>
<tr>
<td></td>
<td>PS (n=56)</td>
<td>-0.5 (68.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CON (n=49)</td>
<td>-22.1 (101.07)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total protein differences (g/d)</td>
<td>MR (n=70)</td>
<td>0.3 (31.66)</td>
<td>1.40 (2,158)</td>
<td>0.249</td>
</tr>
<tr>
<td></td>
<td>PS (n=56)</td>
<td>-6.3 (25.24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CON (n=49)</td>
<td>-8.7 (33.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total fat differences (g/d)</td>
<td>MR (n=70)</td>
<td>2.0 (29.12)</td>
<td>1.91 (2,168)</td>
<td>0.152</td>
</tr>
<tr>
<td></td>
<td>PS (n=56)</td>
<td>-7.8 (27.48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CON (n=49)</td>
<td>-3.7 (26.45)</td>
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One-way ANOVA was applied. Assumptions (normality, homogeneity of variance) were checked and found fulfil
Discussion

- Previous studies demonstrated that workers/healthcare workers lost significant weight following intervention behavioural, dietary and physical intervention (Thorndike 2011, Tee 2012, Hemysfield 2003)

- Dietary self-reporting is a commonly used for population surveillance of dietary intake. However, reporting errors and daily variations in dietary intakes may be barriers to achieving reliable results with estimated under reporting 25-68% (Black and Cole 2001, Lauren S. F, 2014)
Conclusion

• Despite the reduction of dietary intake in groups, there were no significant difference in between groups.

• The 6 months intervention was focusing on behavioural modification approach through modification of dietary, physical activity and behavioural

• Further assessment in MyBFF
  • Weight loss, BMI & WC
  • Changes of Blood Parameters
  • Cost benefit analysis of MR and PS
  • Changes in Physical Activity Level
  • QOL and pain score
  • Acceptance and compliance to MR
More research should be carried out in the future with cultural appropriateness, feasibility of replication and also cost effectiveness.
References

Acknowledgement

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Terima kasih