Nutritional quality and adherence to Mediterranean diet in industrial shift workers. An interventional project

M. Montalti¹, F. Soffi², A. Piccioli¹, V. Cupelli¹, A. Casini², G. Arcangeli¹

¹Dipartimento di Sanità Pubblica, sezione di Medicina del Lavoro, Università degli Studi di Firenze.
²Agenzia per la nutrizione Università degli studi di Firenze

Background

• WHO data:
  – 86% of death
  – 77% of lost years in good health status
  – 75% of income in health sector

By illness caused by modifiable risk factors as:

smoke, obesity, overweight, alcohol abuse, low consume of fruits and raw vegetables, sedentary life style, high level of lipid in blood and hypertension.

Background

Eating behavior might be altered by working shifts, especially when night work is involved for biological, social, and cultural factors

Studies underline the connection between absenteeism and injury and night shift. Obesity also is associated with an increase in injury and working days lost by illness.

Background

Mediterranean diet was defined during sixties by Ancel Keys demonstrating that people living on country posed around Mediterranean sea (in particular South Italy and Greece) had a lower incidence of cardiovascular diseases and cancers.

Objectives

Considering the numerous demonstrations of the good effects of Mediterranean diet of people's healthy status, the goal of this study was to examine the possible relationship between nutritional quality, adherence to Mediterranean diet and shift work.
Methods:

Five step intervention:
1) evaluation of anthropometric parameters (height, weight, abdominal circumference) for each worker;
2) administration of two proper questionnaires about diet, sleep, shift schedules and health;
3) collective meetings focused on nutrition, lifestyle and sleep hygiene;
4) individual dietitian consultations for obese workers;
5) revaluation of the first step at 12 and 24 months after the interventions.

Questionnaire

- One about diet adherence to Mediterranean diet from Panagiotakos et al.
- One about sleep habits and shift schedule

Population studied

- We interview 100 industrial workers of a glass factory
  - 79 were shift workers
  - 99 were male

- Average age was 46±6.3 years
- Average BMI was 27.4±4.04 Kg/m²

Results

<table>
<thead>
<tr>
<th></th>
<th>Shift workers</th>
<th>Non shift workers</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits twice almost per day</td>
<td>28.1%</td>
<td>47.6%</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Raw vegetables almost twice per day</td>
<td>18.8%</td>
<td>38.1%</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Fish almost twice per week</td>
<td>9.5%</td>
<td>20.1%</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Red meat more than twice per week</td>
<td>72.2%</td>
<td>67.2%</td>
<td>&gt;.005</td>
</tr>
<tr>
<td>Sausages more than 4 per week</td>
<td>43.2%</td>
<td>39.1%</td>
<td>&gt;.005</td>
</tr>
</tbody>
</table>

BMI and n° of night worked

<table>
<thead>
<tr>
<th></th>
<th>Shift workers</th>
<th>Non shift workers</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sausages more than 4 per week</td>
<td>&lt;80</td>
<td>&gt;150</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Cheese more than twice per week</td>
<td>&lt;80</td>
<td>&gt;150</td>
<td>&lt;.005</td>
</tr>
</tbody>
</table>
Results one year after

• At the moment 43 workers retest
  28 were shift workers
  43 were male
• Average age is 45.7 ± 6.1 years
• Average BMI is 28.2 ± 3.8 Kg/m²

Changes

• BMI reduction of 0.03 Kg/m²
• Abdominal circumference reduction of 1.25 cm
• 36.4% of workers increase fruit intake,
  50% increase raw vegetables intake,
  20.5% increase legumen intake,
  18.2% increase fish intake.

Conclusion

Nutritional quality is worst among shift workers
and during night shifts with respect to day
workers. This profile can contribute to a worst
risk profile in terms of cardiovascular and
metabolic diseases

Conclusion

Our intervention seem to represent a simple but
valid way to improve quality of food intake and
health parameters.