Chapter-5: Summary and Conclusion
SUMMARY AND CONCLUSION

Aims and Objectives: The aim of this study was to assess the age related differences in lifestyle, dietary pattern and their impact on health and nutritional status of male police constabulary of district Jhunjhunu, Rajasthan.

Material and Methods: The study was carried out in district Jhunjhunu, Shekhawati belt of Rajasthan. Three hundred male constables in the age group of 20-60 years were selected randomly from the total 709 constables in the district. The subjects were divided into two groups 20-40 years (n=150) and 40-60 years (n=150). A questionnaire was designed to elicit information on background characteristics of the subjects’ like-age, caste, religion, education, income, marital status, type and size of family, occupation etc. Information on lifestyle parameters like physical activity, alcohol and smoking/tobacco consumption was also elicited. Anthropometric information like weight, height, waist circumference and hip circumference were measured using standard techniques. Biochemical parameters like hemoglobin, blood sugar and serum lipids were estimated on fasting blood samples. Dietary intake data was obtained using food frequency questionnaire and 3 days 24-hour dietary recall method including one holiday. Occupation stress level in both the groups was assessed using a validated tool (Srivastava and Singh 1984). All responses were coded and entered into a database and analyzed using a statistical software SPSS 16.0 version.
Results: Total 300 subjects selected in the study and were divided into two groups based on their age. Mean age of subjects in group-I was 31±5.0 years and in group-II was 48±4.4 years. Mostly subjects belonged to Hindu religion in both the groups. In group-I, 11% subjects belonged to SC and 20% to ST while in group-II, 23% subjects belonged to SC and 6% to ST. In group-I subjects were more educated than older group. Around 35% to 39% subjects in both the groups used to live in barrack and around 49% subjects in group-I and 41% in group-II used to live with family. Average income of subjects was Rs. 12,246.2 and Rs. 17473.9 in group-I and group-II respectively.

Mean service period of group-I was 10.23 ±5.80 years while 25.86±5.74 years in group-II. Maximum younger subjects in group-I had their duty at reserve police line, police station and traffic while in another group almost equal proportion of subjects had their duties at police station and reserve police line. No provision of weekly leaves was a common feature of both the groups.

Lifestyle assessment of subjects included, physical activity pattern, smoking habit and alcohol intake. Subjects in both groups reported daily exercise habit. Younger subjects spent more time in occupational activities and exercise compared to another group. Categorization of daily activities into different physical activity levels revealed that younger subjects spent
Summary and Conclusion

more time in moderate and heavy physical activity while group-II spent more time in sedentary activities i.e. around 16 hours per day. Alcohol consumption and smoking/tobacco intake was more prevalent among subjects in older group also they had more frequently consumption of these non food items than younger group. Average occupational stress score was slightly more in subjects belonging to group-I however the difference was not statistically significant.

Dietary Assessment: More subjects in group-I had vegetarian food habit followed by ova vegetarian and non vegetarian while in another group maximum subjects were ova vegetarian followed by vegetarian and non vegetarian food habits. Mostly subjects used to eat in mess in both the groups and two meals pattern was most common among the subjects. Meal skipping was reported by around 85-91% of the subjects and amongst the reasons; hard duty and fasts were reported by maximum subjects.

Food Frequency: Cent percent subjects reported daily consumption of wheat as this is the staple cereal in Rajasthan while rice, bajra and corn were secondary cereals in the diet. Daily pulse/legume consumption was reported by 73% subjects in group-I and 84.0% in group-II. Arhar, Moong, Masoor, Urad, Chana, Peas, Rajmah, Moth and Soyabean was among the most commonly consumed pulses/legumes. Daily consumption of roots & tubers,
green leafy vegetables and other vegetables was reported by around 72-84% of the subjects in both the groups, while 12-17% subjects reported consumption of vegetables twice in week. Less than fifty percent of subjects in both the groups reported the daily consumption of fruits. Daily ghee consumption was reported by more than 70% of the subjects in both the groups and amongst the oils mustard oil was most commonly used. Daily milk consumption was reported by 85-93 % of the subjects while curd/buttermilk intake was reported by 70-82% of the subjects on daily basis.

Around 20% of the subjects had daily egg consumption while 34% subjects in group-I and 44% subjects in group-II reported egg consumption twice a week. Daily consumption of meat was reported by 7-10% of the subjects while 15% subjects in group-I and 29% subjects in group-II had meat consumption twice a week. Fried foods intake was reported by 14-17% of the subjects on daily basis including kachori, samosa, bread pakora and mirchi vada etc. More subjects in group-II preferred to eat these fried snacks.

**Food Consumption:** Compared to the RDI for Indians (NIN/ICMR, 2011), average daily cereal consumption of the subjects was 91-92% of the RDI in both the groups. Average daily pulse intake was around 45 gm/day which contributed around 60% of the RDI. Roots and Tubers intake was around 150 gm/day comprising 75% of the RDI and GLVs intake was 90gm/day meeting 90% of the daily requirements while other vegetable intake
was very less i.e. around 68gm/day contributing one third of the daily requirements.

Fruit intake was almost as per the recommendation while milk and milk products, fats and oils and sugars exceeded the recommendations. Average egg/meat intake was around 75gm/day in both the groups. Total energy intake of the subjects was around 2350 kcal per day, slightly exceeding the RDA (ICMR, 2010) for energy. Protein intake among subjects was about 78 gm/day, carbohydrate about 340 gm/day and total fat intake was 74 gm/day.

**Anthropometric Assessment:** Average weight of subjects in group-I was 62.2 kg and 69.0 kg in group-II and mean BMI was 20.8 and 23.3 in group-I and group-II respectively. Majority (73-74%) of the subjects in both groups had normal BMI while prevalence of overweight was 7% in group-I and 25% in group-II. Mean waist circumference was 81 cms in group-I and 89 cms in group-II while mean waist hip ratio was 0.91 and 0.96 in both the groups respectively. Prevalence of central obesity i.e. WHR>0.9 was 15% in group-I and 47% in group-II.

**Biochemical and Biophysical Assessment:** Mean systolic blood pressure (SBP) and diastolic blood pressure (DBP) in group-I was 125.61 ± 10.41 and 82.23 ± 4.88 mm of Hg. In group-II, mean systolic blood pressure was 132.85 ± 11.26 mm of Hg and diastolic blood pressure was 83.74 ± 5.99
Summary and Conclusion

mm of Hg. In group-I three fourth of the subjects (75%) were in the pre-hypertension stage, 21.3% in stage-I and 3.3% subjects in stage-II and in group-II, 47.3% subjects were in pre-hypertension stage, 43.3% subjects were in stage-I and 7.3% in stage-II as per the classification of JNC-VII.

Mean hemoglobin level of group-I and group-II was 14.26 ± 0.47 and 14.04 ± 0.45 gm/dl. None of the subjects was anemic i.e. Hb<13.0 gm/dl.

Mean serum cholesterol levels of subjects in group-I was 160.69 ± 20.93 mg/dl and 169.52 ± 27.11 mg/dl in group-II. Mean serum triglyceride levels of the subjects in group-I was 95.53 ± 53.51 mg/dl and 112.85 ± 61.60 mg/dl. Mean HDL-C levels of subjects in group-I was 41.76 ± 6.25 mg/dl and 40.95 ± 7.38 mg/dl.

Prevalence of border line high risk total cholesterol levels (TC 200-239 mg/dl) was found in 4.0% and 18.7% of the subjects in group-I and group-II, hypertriglyceridemia (TG>150 mg/dl) was found in 8% and 18% subjects in group-I and group-II, very low HDL-C (HDL<40 mg/dl) was found in 52% subjects in group-I and around 61% in group-II and LDL cholesterol levels ≥130 mg/dl were found in 6.0 % and 21.5% of subjects in group-I and group-II respectively.

Mean fasting blood glucose level of subjects in group-I was 82.91 ± 11.95 mg/dl and in group-II was 90.54 ± 21.57 mg/dl (p<0.000). Prevalence of diabetes based on fasting blood sugar levels was found in 0.7% and 4.0%
of the subjects in group-I and group-II respectively and prevalence of metabolic syndrome was 9.3% in group-I and 45.3% in group-II.

**Correlations:** A significant positive correlation was observed between age and smoking, alcohol intake, anthropometric variables, biochemical and bio-physiological variables except for hemoglobin and HDL-C which had negative correlation with age. Occupational stress and age had significant negative correlation. Dietary and nutrient intake had positive association with age except for milk, pulses and sugar however the association was insignificant.

**Conclusion:** Thus in summary,

- Age related differences in dietary and nutrient intake in between both the groups were not observed i.e. the subjects were following same dietary patterns throughout the age span. There was higher intake of fried food and eggs/meat in older age group.
- Lifestyle differences between both groups:
  - Physical inactivity was more prevalent in older age group
  - More smoking and alcohol intake in older group
  - Both groups had medium to higher levels of occupational stress which shows persistent occupation stress over the years of service.
- Health Profile: Age related differences in prevalence of obesity, central obesity, hypertension, metabolic syndrome, dyslipidemia and diabetes mellitus were observed in both the groups.
• Risk of non-communicable disease risk factors such as obesity, central obesity, hypertension, dyslipidemia, hypercholesterolemia were more in older age group i.e. group-II while other behavioral factors such as exercise, low fruits & vegetable intake, high fat diet, smoking, alcohol and occupational stress did not show such association.

The police personnel have to pass through various physical (athletic) tests and medical examination and only absolutely fit candidates are appointed as policemen. This suggests that the policemen join the police department in extremely good health with athletic physique but become unfit later on with advancing service. Prevalence of overweight and obesity was seen in 16.3% of the police personnel. The risk of many diseases including cardiovascular diseases, hypertension, hyperlipidemia, diabetes mellitus, and certain cancers increases many folds in association with obesity. The police personnel should be educated about avoiding fast food, sweets, coffee and tea when they are hungry. Alternatives to fast foods such as energy bars, cheese and vegetable sandwiches should be encouraged, green tea can replace tea and coffee, fresh fruits can replace sweets. Unknowingly the policemen may be consuming tea or coffee many times in a day to keep themselves alert, but they may not know that each cup of tea constitutes 75 Calories and coffee 110 Calories. These people also have irregular and spicy hotel made diet and limited choice of food while on duty, take overtime and shift work, suffer from sleeplessness, high rate of alcohols and tobacco consumption and
stressed than the general people. Police personnel often are overly fatigued because of shift work, insufficient sleep and long and erratic work hours. Thus there is strong need to address these problems in police professionals through multiple approaches to overcome occurrence of chronic diseases.