RISK FACTORS AND HEALTH STATUS AMONG OPERATORS AT A LARGE CALL CENTER IN ITALY

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INTRODUCTION
Call centers are a rapidly growing industry in many countries.

Workers are exposed to a variety of health hazards, e.g.:
• video display unit working
• indoor air quality
• stress
• others, as noise and vocal strain

OBJECTIVES
To investigate health risk factors and the health status of operators at a large call center by an integrated approach including building assessment, environmental measurements, questionnaire survey and health surveillance data analysis.

CALL CENTER

HEALTH RISK ASSESSMENT AND HEALTH SURVEILLANCE IN A LARGE CALL CENTER IN ITALY

1. HEALTH RISK ASSESSMENT
- Check-list (from “HOPE project”)
- Environmental surveillance
  - IAQ: PM10, TVOCs, Benzene, Toluene, Xylenes, Formaldehyde, CO2
  - Microbiological agents, Allergens
  - T, air velocity, relative humidity, PMV, PPD
  - Noise: environmental noise and on earphones

2. HEALTH SURVEILLANCE
- Results from the periodical health surveillance have been collected and evaluated
- Questionnaire “Environment and Health”
  - Self-administered questionnaire on subjective perception of environmental working conditions and subjective symptoms (adapted from Anderson K. et al, 1993)
- Questionnaire “Voice Handicap Index (VHI)”
  - Self-administered questionnaire on subjective perception of vocal performance (Karalala e Wikman, 1999)
RESULTS: 1. HEALTH RISK ASSESSMENT

Buildings characteristics
- Check-list “HOPE”:
  - sources of TVOCs
  - management ventilation system

Work process and for workspace’s ergonomics
- No significant evidences

Environment surveys
- TVOCs: mean 210 µg/m$^3$ (194 – 389 µg/m$^3$)
- Microclimate: in 5/9 rooms PMV not in comfort range (-.05 ÷ .05) — PPD > 10%
- Noise: . Environmental noise: 55-64 dB(A)
  . On earphones: also > 80 dB(A)

RESULTS: 2. HEALTH SURVEILLANCE

Health Surveillance

Three subjects with dysphonia and one case of vocal cords nodules

"Environment and Health" Questionnaire

Microclimate evaluated “negative” or “partially negative” by 88% of the workers

Environmental Noise evaluated “negative” or “partially negative” by 81% of the workers

The most reported symptoms were eye symptoms (30%) and musculoskeletal complaints (21%)

Voice Handicap Index - VHI Questionnaire

Valuation tool of VOICE QUALITY: (Rantala e Vilkman, 1999)
- 3 Scales: . Physical (P)
  . Functional (F)
  . Emotive (E)

Total score (T score) from 0 to 120

Altered vocal function: T score > 30

VHI value resulted over the limit of 30 in the 8% of the subjects
Conclusions

In Call Centers workers can be exposed to different health risk factors. In this study the main issues were represented by IAQ, noise on environment and on earphones, and high vocal strain.

An integrated and multidisciplinary approach has been recommended, including in particular:
- Risk Management: TVOCs indoor sources, Ventilation system, noise; periodical risk assessment
- Training of workers: prevention of postural risks and use of voice
- Health surveillance protocol: IAQ perception and symptoms questionnaire, VHI, audiometry

Thanks for the attention

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