STATUS AND EFFICIENCY OF OCCUPATIONAL HEALTH SERVICES IN SEVERAL GROUPS OF EDUCATIONAL STAFF FROM A MEDICAL UNIVERSITY

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BACKGROUND

University of Medicine & Pharmacy
Tg.Mures, Romania

1945 → Our University was established as the Faculty of Medicine of the Bolyai University from Cluj.

1948 → The Faculty became autonomous as the Institute of Medicine & Pharmacy with five departments
(General Medicine, Pediatrics, Hygiene, Dental Medicine and Pharmacy).

1991 → The Institute became University of Medicine & Pharmacy (UMPh).

2011 → UMPh operates with
* 3 divisions (Medicine, Dentistry, Pharmacy)
* 117 subdivisions (84 educational & 33 non-educational)
* 850 employees.

The Occupational Medicine & Health and Security on Work subdivision
- **Is responsible for occupational health and safety management**
- **Works under Law 319/2006 and its enactments**
- **Ensures the best possible employee health and a clean work environment.**

Occupational Health and Safety Management

INCLUDES THE FOLLOWING ACTIVITIES:

- **Risk assessment** in all workplaces of every department for prevention of occupational diseases and professional injuries using The Institute-method.
- **Yearly health status evaluation** of the employees, including:
  - general yearly medical examination
  - medical examination for adaptation period, after return from sick leave
  - periodic medical evaluation specific to workplaces/exposures.
- **Maternity protection** at work.
- **Disability protection** at work.
- **Risk communication** to all responsible factors implied in professional activities.
- **Strategy development** regarding the occupational health & safety of the personnel by workplace controls, work-conditions improving methods, work security instructions and knowledge assessment.
- **Collaboration** with:
  - the leadership of the University, the staff of all departments (educational and services)
  - all community health sectors
  - colleagues of occupational medicine from other universities & from all over the world
- Editing scientific papers, participating at postgraduate courses, conferences, congresses, workshops.

INTRODUCTION / OBJECTIVES

- University employees are exposed to a variety of biological, chemical, physical and psychological factors which can endanger their health status and lower their work performance.
- All workplaces need monitoring and comprehensive occupational health services.
- Of the 117 subdivisions, the following 10 subdivisions have higher risk of occupational exposures:
  - Anatomy, Histology, Anatomic Pathology, Forensic Medicine, Microbiology, Infectious Diseases, General Toxicology, Cell biology, Respiratory Diseases / Tuberculosis and Radiology.

The present study was performed to evaluate the status and efficiency of occupational health services (OHS) to the educational staff in four of the ten higher risk subdivisions, including
Anatomy (31 persons),
Histology (9 persons),
Anatomic Pathology (9 persons), and
Forensic Medicine (3 persons).

METHODS

Risk assessment for prevention of occupational diseases and professional injuries by monitoring of noxious agents (formaldehyde, xylene, toluene, benzene) and evaluating the cleanliness of work-environment.

Yearly health status evaluation of the exposed educational staff from the above mentioned departments by periodic medical control according with National Standards.

Risk communication to all responsible factors implied in professional activities → measured by the efficiency indicator against the existing risks (EIAER) = expected measures/ taken measures.

Strategy development regarding the security & health status of the personnel by workplace controls, work-conditions improving methods, work security instructions → measured by the rate of expected values/ observed values and by the scores received by the personnel of each departments after taking a multiple-choice test regarding the general and special norms of work protection.

Collaboration with all community health sectors → measured by the indicator of communicability (IC) = inquiries/ responses.

Management of occupational health activity in the University of Medicine → measured by the health status of the educational staff.

Characteristics of the Studied Subdivisions

Nr.	Department RAS***	Nr. of Staff	Mean Age (yrs) X ± SD	Mean Exposure Time (yrs)	Gender F*	Gender M**
1.	Anatomy RAS=5.2	N = 31	42.3 ± 5.1	13.7 ± 2.6	10	21
2.	Histology RAS=4.8	N = 9	41.1 ± 4.9	14.1 ± 2.7	7	2
3.	Anatomic Pathology RAS=5.3	N = 9	48.2 ± 5.3	15.4 ± 3.1	3	6
4.	Forensic Medicine RAS=5.8	N = 3	46.5 ± 5.1	12.9 ± 2.5	1	2

Note: *F→Females; **M→Males; ***RAS→Risk Assessment Score (Scale 1→10)

Exposure Monitoring – Formaldehyde

Measured At the Source of Exposure (e.g. next to a corpse)

Departments	Workplace*	Job classification	Formaldehyde** (F) in mg/cm air	Admissible limits*** (according with the National Standards)
Anatomy - 31	Morgue Laboratory Dissection room	- Body Transport - Analyst - Educational staff	5,93 mg/cm air 2,99 mg/cm air 3.59 mg/cm air	3 mg/cm air
Histology - 9	Laboratory Classroom	- Analyst - Educational staff	3.11 mg/cm air 2.89 mg/mc air	3 mg/cm air
Anatomic Pathology- 9	Throughout Laboratory Dissection room	- Caregiver - Analyst - Educational staff	2.54 mg/cm air 2.67 mg/cm air 3.47 mg/mc air	3 mg/cm air
Forensic Medicine - 3	Dissection room	- Educational staff	4.16 mg/cm air	3 mg/cm air

Note: * normal working conditions (temperature, ventilation, personal protective equipment, etc.)
** determined by spectrophotometer of molecular absorption on UV / VIS with Cintra5 device
*** General rules of work protection, 2002 & 2006

Exposure Monitoring – Formaldehyde/ BTEX

Measured At the Individual Worker (e.g. at worker's nose)

Departments	Workplace* (individual sampling)	Formalde-hyde** (F)	BTEX***	Exposure index - EI	SEI****	Conclusions (IR>LV in 15 minutes)*****
Anatomy - 31	- Body transport - Analyst - Edu staff	Yes Yes Yes		2.9 pt F. 3.1 pt F. 1.8 pt F.	- - -	Unsteady exposures
Histology - 9	- Analyst - Edu staff	Yes Yes	Yes	0.4 pt F. 0.1 pt T, EB. 0.3 pt F.	- 0.2 NS -	Unsteady exposures
Anatomic Pathology - 9	- Caregiver - Analyst - Edu staff	Yes Yes Yes		0.7 pt F. 2.2 pt F. 1.2 pt F.	- - -	Unsteady exposures
Forensic Medicine - 3	- Edu staff	Yes		1.9 pt F.	-	Unsteady exposures

Note: * normal working conditions (temperature, ventilation, personal protective equipment, etc.)
** Formaldehyde determined by SR EN 482 methodology
*** BTEX (benzene, toluene, ethylbenzene, xylene) determined by SR ISO 9487 methodology
**** SEI Synergistic effect index
***** IR >LV in 15 min (Individual results must be > admissible limit values during the determination → for signif.exposure

Exposure Monitoring – BTEX

Measured At the Individual Worker (e.g. at worker's nose)

Histology subdivision

-section preparation from different organs-

Health Status of the Educational Staff

Evaluation of employee health status is based upon the following documents:

1. Exposure bulletins' determination related to professional pollutants
2. Periodic medical control of employees
3. Existing situation on professional diseases during the 1990-2010 period → confirmed by the Authority of Preventive Medicine Tg.Mures, Department of Monitoring and Control
4. Evaluation of morbidity indicators starting from the existing sick leaves (SI = severity index; AI = average index; FI = frequency index)
   Note: since the political changes in 1990, these indicators have lost their objectivity

Health Status of the Educational Staff

Departments	*General clinical examination	Ventilatory tests (PFV)	Complete Blood Count	Liver samples (GOT, GPT)	**Exposure tests (BTL***)
Anatomy- 31	No occupational abnormalities	Mild mixed ventilatory disorder 45%	Normal in borderline	Borderline	< BTL
Histology- 9	No occupational abnormalities	Mild mixed ventilatory disorder 25%	Normal in borderline	Borderline	< BTL
Anatomic Pathology- 9	No occupational abnormalities	Mild mixed ventilatory disorder 40%	Normal in borderline	Borderline	< BTL
Forensic Medicine- 3	No occupational abnormalities	Mild mixed ventilatory disorder 35%	Normal in borderline	Borderline	< BTL

Note: * Includes Blood pressure measurement
** Include: Urinary excretion of phenol, acetone and hipuric acid
*** BTL: Biologically Tolerable Limit

Risk Communication → EIAER Values

Risk communication
→ measured by the efficiency indicator against the existing risks (EIAER)
EIAER = expected measures/ taken measures (ideal value =1)

Responsible factors (institutions, departments of the University):
- Management/ leadership of the University (Senate Office) – EIAER = 1.38

↕

- Technical department of the University – EIAER = 1.62
- Authority of Preventive Medicine – EIAER = 1.18
- Territorial Labor Inspectorate - EIAER = 1.13

EIAER values >1 → reflect a deficiency in communication between the health protection human factors.

Strategy Development

Methods to improve the security & health status of the personnel:

1. Workplace evaluation (2-3 times/ month)
   ↓
2. Work-condition improvement
   → proper use of the existing artificial ventilation
   → proper use of personal protective equipment
   (full mask with filter against the vapors of organic substances and solvents)
   → sources of exposure (e.g. corpses) must be obligatorily covered whenever possible

3. Compliance measurement
   → the rate of expected values/ observed values
   → the scores received by the personnel of each department after taking a multiple-choice test related to the general and special norms of work protection

Collaboration with Community Health Sectors

Collaboration with all community health sectors
→ measured by the indicator of communicability (IC).
IC = inquires/ responses (ideal value =1)

Community health sectors:
* Hospital of Occupational Medicine – IC = 1.24
* All hospitals with the included special departments – IC = 1.32
* Outpatient services – IC = 1.65
* Family doctors – IC = 1.83
* Authority of Preventive Medicine – IC = 1.23
* Private clinics – IC = 1.89

The IC values (along with the EIAER) reflect a deficiency in communication between the health protection human factors

CONCLUSIONS

Work-environment monitoring of noxious agents (e.g. formaldehyde) has shown values sometimes above the admissible limits.

The medical exam is within normal limits and the laboratory analysis shows occasional borderline abnormalities.

The EIAERs were >1, along with the IC , both reflecting a deficiency in communication between the health protection human factors.

The educational staff has received good scores on the occupational safety multiple-choice test (85-98%).

The work-conditions have been improved by the technical sector of the University.

No professional diseases were reported from the Authority of Preventive Medicine, Surveillance and Control sector during the 1990-2010 period.

DISCUSSION

- The studied educational staff health condition – according with the results of periodic medical control - was good…
- No occupational diseases and professional injuries were found in the studied sectors during the last 20-years, reflecting the efficiency of OHS at the University.
- At UMPh – according with the educational process – the same noxious agents are not used daily, 6-8 hours/day, but according with the practical work of the students, as well as in the research themes. On the other hand, one determination value for a workplace is not enough to characterize the exposure.
- Professional activity routes making for educational staff per semesters according with the used noxious agents/ effective time of their use is very difficult… and granting of increases is very subjective…
- Occupational Medicine, a preventive medicine by excellence, should not be "a factory of premiums", but an instrument and a way to promote the security and health in work for all employees of the University.

Thank you for your attention and time!!!

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