Occupational Health Nursing

A THEORETICAL MODEL

by Gwendolyn E. Lundberg, BSN, RN

A theory is a good theory if it satisfies two requirements: It must accurately describe a large class of observations on the basis of a model that contains only a few arbitrary elements, and it must make definite predictions about the results of future observations (Hawking, 1988).

To apply Hawking's statement to occupational health nursing theory development requires one to generate a model reflecting the basic elements of this practice area. Theory based on such a model would describe a large class of nursing interventions and outcomes, and offer strong statements about predictability of outcomes. The requirement for predictability in a theory is no less true for nursing theory than other theories (Meleis, 1991).

Why develop models or theories of occupational health nursing? What purposes might be served? A theory can expand understanding of a system. A theory is a "set of rules" and it "exists only in our minds" (Hawking, 1988). From models, theories arise.

To understand the specific roles or functions of the occupational health nurse, one must analyze the components of the context of this specialty practice and develop a model of those interactions. Indeed, occupational health nursing functions within a unique multilayered context; consideration of the worker in the workplace is paramount.

Looking at the components of a complex system can help explain individual operations or functions within that system. This is true for an electronic circuit board or for human discourse. The larger environment—with its layers of events, situations, understanding, organizational rules and regulations, activity, insights, and interconnections—weaves the final outcome, whether it is a digital calculator or a management decision about health and safety in the workplace.

Bronfenbrenner (1979), speaking of human development in society, refers to "an ecology of human development." These words acknowledge a functional interdependence between living organisms and their surroundings. This perspective views the environment as "a set of nested structures, each inside the next, like a set of Russian dolls" with the developing person in the center (Bronfenbrenner, 1979). Applying this idea to occupational health nursing, the worker is in the

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TABLE 1

Occupational Health and Safety Team Input

Analysis of Risk Reduction
Audiometry
Biological Monitoring
CPR/First Aid Training
Counseling
Early Return to Work Programs
Employee Assistance Programs
Exercise Programs
Health Education/"Wellness" Programs
Health Screening
Hearing and Vision Screening
Leadership/Management
Management of Workers' Compensation Claims
Medical Referrals
Medical Surveillance
Modified Duty Programs
Monitoring Health and Safety Hazards
OSHA/WISHA Recordkeeping
Physical Therapy Treatment
Preplacement Physical Exams
Pulmonary Function Testing
Research
Safety Programs
Treatment of Injuries and Illness

Partially derived from DeCarteret (unpublished 1991 data)

TABLE 2

Output

Absenteeism	(Reduced)
Corporate Attractiveness	(Increased)
Compliance with Self Protective Measures	(Increased)
Cost Effective Management	(Increased)
Costs of Retraining Injured Workers	(Reduced)
Costs of Training New Workers	(Reduced)
Employee Health	(Increased)
Employee Morale	(Increased)
Illness and Injury Occurrences	(Reduced)
Job Satisfaction	(Increased)
Lost Time on the Job	(Reduced)
Productivity	(Increased)
Efficiency of Use of Health Care Benefits	(Increased)
Work Environmental Safety	(Increased)
Workers' Compensation Claims	(Reduced)

Partially derived from DeCarteret (unpublished 1991 data)

center, surrounded by multiple social systems and conditions, workplace situations, and human communication networks.

The model described in this article is a step in developing occupational health nursing theory. Feedback control theory (Gupta, 1970) is used in considering the dynamic processes at the heart of the occupational health services delivery model. Control theory evolved (Tenney, 1980) from the study of smaller mechanical systems with basic properties of being "well understood"; where "certain outputs (which provide information on the internal workings of the system) are measured"; and, where "inputs can be supplied to it which then affect future outputs." Subsequent inputs are derived from past outputs, creating a feedback loop. These principles are useful, in part, in considering models of human interaction.

In the model for occupational health nursing, input consists of health and safety interventions implemented by an interdisciplinary team. Output arises as a cumulative response to workplace system input. Subsequent inputs will respond to outputs. This fundamental feedback system is placed within the context of a dual environment, which will influence the character and flow of both input and output. The model suggests that measurable input (Table 1) can result in measurable output (Table 2), producing predictable relationships. These relationships can be the foundation of occupational health nursing theory and practice.

The contribution of occupational health nursing to safety and health in industry will continue as the year 2000 approaches. The occupational health nurse will still provide on the job employee health care services, but increasingly, occupational health nursing leaders will assume program development and implementation responsibilities. This typifies current corporate expectations (Lusk, 1990). Role expansion must be adopted by occupational health nurses if they are to play an active role in future workplace health care services delivery.

The complexity of the workplace today demands that the occupational health nurse not work in isolation. Increased government mandates for worker health and safety and employees' increasing awareness of workplace hazards demand creative and collaborative thinking among the occupational health nurse, management, and health and safety professionals in a given work setting.

Role expansion must be adopted by occupational health nurses if they are to play an active role in future workplace health care services delivery.

Teamwork is vital. No single individual in an organization will be responsible for health and safety. To be effective the occupational health nurse must be an active team member (Dees, 1984; Friend, 1990; Gifford, 1984; Wilkinson, 1990).

This article has several purposes. It conceptualizes the occupational health nurse as a team member. Teamwork interaction is vital for delivery of effective occupational health and safety services.

The article also is a reminder that health care providers, who recognize that the "worlds" of work and non-work are vitally interconnected, can more completely understand and address the effects of increased demands placed on individuals by contemporary society. In so doing, such providers are better able to develop programs that are useful and effective.

Finally, the author is optimistic that, in spite of the complexity inherent in providing optimal health and safety in the workplace, "win-win" situations for both employees and employers are possible.

ASSUMPTIONS

The model is based on a number of assumptions about the client/workers, the work environment, and occupational health nurses (Hanchett, 1990; Rogers, 1988):

- Workers are rational humans capable of making decisions, setting goals, and assuming responsibility.
- Workers are free to accept or reject health related interventions from the occupational health nurse (Dees, 1984).
- Workers generally will assume personal responsibility for self protection from hazardous exposures when the employer provides adequate knowledge and materials for protection.
- There are multiple levels of organizational interaction and complex interrelationships between work and non-work environments and the factors that precipitate health or illness among the aggregate of workers (Bernhardt, 1988; Buchanan, 1987).
- The occupational health nurse places high value on health and safety.
- The occupational health nurse provides ethical interventions, confidentiality, and privacy to all employees.
- Occupational health nursing goals will complement and reflect both the mission of the organization and the mission of nursing.

PREMISES HELD BY LABOR AND GOVERNMENT

Development of this model is also influenced by a number of premises held by labor organizations and government agencies. Although seemingly fundamental in a democratic system, these premises are worthy of repetition when one considers workers' rights to health and safety (Levy, 1988):

- Workers are entitled to safe working conditions, and employers have a legal and moral obligation to provide such conditions.
- Health and safety interventions will be provided to all employees, regardless of ethnicity, gender, predispositions, physical handicaps, or lifestyle habits or practices outside the workplace.
- Worker self protection must not be expected in lieu of employers meeting legal obligations to make the workplace safe and healthful.
- Workers have a fundamental need for and right to all chemical and physical workplace hazard information known to the employer, vendors, or suppliers.
- Workers should not be required to work with unsafe chemicals that have not been tested adequately for toxicity.
- Workers have a right to health surveillance and site monitoring information generated about their health as individuals or as part of research on the worker aggregate.
- Workers disabled by work related injury or illness deserve fair and prompt compensation for lost earnings and prompt and adequate health care.
- Law and collective bargaining must be supplemented by good faith, workplace specific health and safety rules, and regulations.

PRIMARY CONCEPTS

Four concepts are fundamental to nursing—person, health, environment, and nursing. For occupational health nursing the "person," or client, is the worker. Although workers may be dealt with individually, they are viewed collectively as community. That community, as an aggregate, is also the client (Hanchett, 1990; Orem, 1987; Schultz, 1987).

This model considers a dual "environment": the non-workplace (external) and the workplace (internal) milieu, within which employees live and work. "Health" is the optimal functioning of

workers as individuals and as aggregate, within the boundaries of both personal and environmental limitations (King, 1990; Pender, 1990).

For purposes of the model, "nursing" is defined as the discipline and process of providing health care and health maintenance that approaches clients in a holistic fashion, from multidimensional viewpoints via ongoing assessment, diagnosis, intervention, and evaluation with the goal of achieving a state of optimal health for the client (King, 1990).

Work and health promotion are also concepts of particular importance in occupational health nursing. "Work" is simply defined as tasks in the employment setting that require mental and/or physical exertion or effort of persons designated as workers. "Health promotion" is defined as activities or primary prevention programs that further or encourage optimal levels of functioning among the client/worker, within an environment "before disease or illness occurs" (Moore, 1984). Secondary or tertiary levels of prevention include, respectively, early diagnosis and treatment, and rehabilitation (Moore, 1984). The latter focus is on returning the individual "to the highest level of function possible" (Moore, 1984), which represents a health maintenance focus.

Strategies can overlap for health promotion and health maintenance activities, and both can occur in the workplace. Health promotion "encompasses the whole client" and assists one's "changing relationships with the environment" and generally demands "intense inter-human process" (Smith, 1990) for implementation. Therefore, the workplace, from an environmental perspective, can be an optimal setting for health promotion and for health maintenance.

MODEL COMPONENTS

The model is an attempt to conceptualize the workplace from the worker's point of view. The "world" is split into two environments—internal and external. Health care providers increasingly recognize the effect of environmental factors on health outcomes (Chopoorian, 1986; Gifford, 1984; Javid, 1983; Rossi, 1990). The model (Figure), with use of the broken line, suggests interchange between the two.

The model has five major components: the non-workplace (external) environment, the workplace (internal) environment, the aggregate of workers, occupational health and safety team input, and output. Elements of each component are delineated. Overlap among elements is recognized.

External Environment

The first component of the model, the non-workplace (external) environment, is defined as the context within which the worker lives and functions as a member of society outside the workplace (Chalmers, 1989; Chopoorian, 1986; Pender, 1990). It is the world separate from the workplace which, nonetheless, affects the work experience to varying degrees.

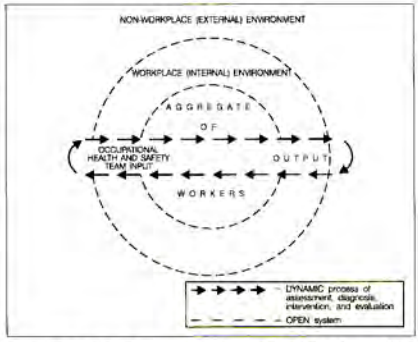

Figure: A theoretical model for occupational health nursing.

Several elements that can be designated as climates comprise an external non-workplace environment. The political/regulatory climate is the state of national or local government and promulgated rules and regulations that govern people's lives and their workplaces. Striking contemporary examples are the Americans With Disabilities Act passed in July 1990, and recent changes in OSHA regulations.

A social climate consists of the lifestyle, welfare, and myriad formal and informal human interrelationships and circumstances among, and within which, a human being lives day to day. A cultural climate refers to attitudes, beliefs, values, and practices of people at a point in time. An economic climate is the national and local prosperity; changes in supply and demand of goods and services can have profound impact on daily life.

Finally, an element identified as the global climate represents worldwide prevailing situations or conditions derived from acts of humankind and of nature (e.g., ozone layer changes, pandemics, drought). The interplay among these elements of the external world can be of enormous magnitude, or barely noticeable, and of infinite variety. Exchange between the dual environments identified with the model is of similar nature.

Internal Environment

The workplace (internal) environment refers to

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the distinctive features that can comprise a work setting. Interplay occurs among elements of this environment as well. Results of the interaction ultimately describe the workplace and the worker's experience of working. The internal environment includes several elements such as an internal corporate mission.

Management philosophy and established goals of the organization reflect the company mission. From these the company develops policies and practices. Local plant principles and operations may, however, derive initially from those promulgated by corporate headquarters. These headquarters may be far removed from a given plant and seem external to the workplace. Because the larger goals of company headquarters are integral to the small plant across the country, or across the border, this distant milieu is considered part of the internal environment.

The internal environment also includes worker-worker and worker-management interactions—the communication and reciprocal actions or influence among employees and management. Management and/or personnel practices and policies define the definite courses of action adopted by the executive or leadership branches of an organization for the sake of expediency, facility, and consistency in accomplishing the corporate mission.

Workplaces may or may not have health and safety practices and policies, the definite courses of action adopted by an organization related to plant cleanliness, safety, and worker health promotion. Unions are another element that may or may not exist in a work setting. These formal labor organizations of workers can have a significant effect on one's work experience.

Worker involvement in policy making can be weak or strong. Employees might participate in or provide input to management decision making processes about development of definite courses of action to be pursued by management. This factor can play a role in worker job satisfaction.

Work hazards and risks can exist in a variety of work settings, from lumber yards to law offices. Risks to which a worker might be vulnerable exist in a variety of modes, from falling machinery, to video display terminals as a source of fatigue.

Capital resources and priority setting of expenditures by management can also profoundly define organizational functioning. Disposable resources dictate, for example, what occupational health programs exist in a work setting. The worksite infrastructure refers to the organization's facilities and equipment and the technological framework within which work tasks are accomplished.

Lastly, an internal workplace culture refers to the norms, values, ethical considerations, beliefs, attitudes, and standards of behavior explicitly and implicitly communicated, shared, and shaped by employees and employers. All of these elements, in a variety of ways, provide the workplace structure and determine the parameters of the work experience.

Aggregate of Workers

The aggregate of workers is defined as the individuals or employees of an organization who make up the work community. Individual occupational health services will be provided for all workers as necessary. However, each person is considered as they function within the context of the working community, that is, as a unique individual but also as a contributing member of a larger body. Each individual brings unique attributes to the workplace setting that collectively contribute to the group. Personal attributes are shaped by the environments combined.

An educational achievement level, work task skills, or specific professional expertise is brought to the workplace by each employee. Each worker has a degree of formal or informal schooling, training or instruction, and abilities in crafts or trades, whether they are clerical staff or company president.

Lifestyle activities, physical and psychological health status, and hazardous exposures also characterize each worker. That is, the effects of non-work actions, functions, or roles, any measurable or self perceived levels of well being, or any non-work exposure to toxins or other health hazards are all, in a sense, brought to the workplace by each worker. What goes on outside the non-work arena can significantly affect physical, emotional, and social responses at work.

Ethnic identity and language, or any of the personal cultural, racial, religious, or linguistic traditions individuals practice, will shape communication experience in the workplace. Personal communication and political skills or styles, that is, the usual spoken or written methods of interchanging thoughts, opinions, or information, can also markedly affect worker productivity, work experience, and satisfaction with collegial interaction.

Personal stressors, or any situations that dis-

turb or interfere with physiological or psychological equilibrium, can intrude on worker productivity. One's attitude and level of commitment to work or dispositions and feelings toward the job can impinge or improve the quality of one's work.

Finally, knowledge of occupational health and safety practice or the awareness of facts and principles of workplace protection, both internalized and practiced by the worker, can readily shape events at work. Every worker is a unique constitution, genetically and environmentally shaped, to bring a personal contribution to the work setting.

Occupational Health and Safety Team Input

Occupational health and safety team input identifies the expanded occupational health nursing role in the model. Recognition of the occupational health nurse as a team member is increasing (Morris, 1985; Rossi, 1990). Depending on organizational structure, other team members might include representatives of management, industrial hygiene, safety and personnel, employees of the organization, occupational health physicians and other health services providers, as well as vendors of services and equipment.

Workers must be actively included as members of this team. Clearly, their perceived and identified needs must be considered before any intervention can be proposed or undertaken.

The essence of this model is that the occupational health nurse does not work in isolation. The occupational health nurse can be an independent practitioner whose activity or input reflects a consolidation of interaction with others. The occupational health nurse may provide the leadership or be a group participant. Whatever the service provided, the effort is the result of information exchange and collaboration.

The actual input in the model refers to a range of services that can be provided in the workplace setting for worker health and safety (Table 1). Input results in output in a dynamic and ongoing process of assessment, planning, intervention, and evaluation, as the arrows in the Figure indicate. This input-output system operates within the dual environment to indicate that all team participants are affected by both environments, personally and professionally.

Dual environmental interchange also suggests that workplace activities (the health and safety input) can subsequently influence a worker's lifestyle practices away from the job. Likewise, personal habits, attitudes, experiences, and perceptions gained in the "external" world can influence a worker's receptivity to health programs, and other experiences, in the workplace.

Output

Output refers to dependent, measurable variables (Table 2) (DeCarteret, unpublished 1991 data; Department of Labor and Industry, 1988; Gifford, 1984; Lusk, 1990). Depending on input, output varies. Output can be increased or reduced to varying degrees. If input and output variables are further articulated, theories can be proposed and tested and statements about predictability made using this model. As for many scientific theories, the natural, intertwined labyrinth of environmental variables compounds the complexity of theory development. Complexities need not be eschewed. Recognizing the multiplicity of factors within which individuals live and work as the 21st century approaches can be a first step, not only in theory development but in clarifying direction.

Essentially this model suggests that occupational health nurses are team members in a dynamic system. Occupational health nursing professional activity is strongly influenced by environmental conditions and mandates, just as are the actions and interventions of all team members. The generic principles of this model identify an expanding role for the occupational health nurse in any of a variety of occupational communities where health and safety of the working community is the goal.

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IN SUMMARY

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1. Predictability must exist in occupational health nursing theory, as it does in other theory.

2. Occupational health nursing can be examined within a simple, dynamic model, from which theory can be developed. Predictions of output can be derived from knowledge of input.

3. Occupational health nursing is a vital component of the occupational health and safety team, the members of which collaborate to provide occupational health services to the aggregate of workers in the workplace.

4. Delivery of occupational health services to workers is provided within a dynamic environment which can be analyzed as both internal and external. The elements of these environments determine the composition and characteristics of the occupational health services.

Wilkinson, W.E. (1990). A conceptual model of occupational health nursing. *AAOHN Journal, 38*(2), 73-77.
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