



Explanative and intervention models in workers' health promotion*

Modelos explicativos e de intervenção na promoção da saúde do trabalhador

Modelos explicativos de intervención en la promoción de la salud del trabajador

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ABSTRACT

Objective: To search for scientific evidence in literature of explanative and intervention models to promote workers' health and prevent occupational accidents with biological material. **Methods:** Integrative literature review. **Results:** Eleven articles met the inclusion criteria, with 36.4% of them using explanative models centered on the individual behavior or enabling the interaction between individuals and service providers; 63.6% used intervention models to promote the health of workers exposed to biological risks. **Conclusion:** Intervention models are more relevant in the worker health area, since they organize the technical and scientific means to intervene in risks and damage to health, incorporating a logic that guides the technical interventions for the problems and necessities of the workers.

Keywords: Health promotion; Accidents occupational; Occupational health

RESUMO

Objetivo: Buscar evidências científicas, na literatura, de modelos explicativos e de intervenção para promoção da saúde do trabalhador e prevenção de acidentes de trabalho com material biológico. **Métodos:** Revisão integrativa da literatura. **Resultados:** Onze artigos atenderam aos critérios estabelecidos, 36,4% usaram modelos explicativos centrados no comportamento individual ou possibilitaram a interação entre os indivíduos e prestadores de serviço, 63,6% usaram modelos de intervenção para a promoção da saúde de trabalhadores expostos a riscos biológicos. **Conclusão:** Os modelos de intervenção são os mais relevantes na área de saúde do trabalhador, pois direcionam para um modo de dispor os meios técnicos e científicos para intervir sobre riscos e danos à saúde, incorporando uma lógica que orienta as intervenções técnicas sobre os problemas e necessidades dos trabalhadores.

Descritores: promoção da saúde, acidentes de trabalho, saúde do trabalhador

RESUMEN

Objetivo: Buscar evidencias científicas, en la literatura, de modelos explicativos y de intervención para la promoción de la salud del trabajador y prevención de accidentes de trabajo con material biológico. **Métodos:** Revisión integrada de la literatura. **Resultados:** Once artículos atendieron a los criterios establecidos, 36,4% usaron modelos explicativos centrados en el comportamiento individual o posibilitaron la interacción entre los individuos y prestadores de servicio, 63,6% usaron modelos de intervención para la promoción de la salud de trabajadores expuestos a riesgos biológicos. **Conclusión:** Los modelos de intervención son los más relevantes en el área de salud del trabajador, pues orientan hacia un modo de disponer los medios técnicos y científicos para intervenir sobre los riesgos y daños a la salud, incorporando una lógica que orienta las intervenciones técnicas sobre los problemas y necesidades de los trabajadores.

Descriptor: Promoción de la salud; Accidentes de trabajo; Salud laboral

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INTRODUCTION

The hospital environment offers risks to the health of its workers due to the exposure to chemical, physical, biological, psychosocial agents, and factors related to ergonomic inadequacies⁽¹⁾. Among the consequences of this exposure are occupational accidents with biological material caused by cutting and piercing material⁽¹⁾. In 2007, the Center for Disease Control (CDC) showed that every year there are 385,000 occupational exposures to biological material among health workers, involving cutting and piercing objects⁽²⁾.

Blood is the most common biological material involved in occupational exposures. This is a disturbing factor, since pathogens like hepatitis B (HBV) and C (HCV) viruses as well as that of the acquired immunodeficiency syndrome (HIV) are blood borne. Although the risk of occupational infection depends, among other factors, on the viral concentration, the risk of transmission is from 0.25% to 0.4% for exposure to HIV, 6% to 30% for HBV, and 0.4% to 1.8% for HCV⁽¹⁾.

The consequences of occupational exposure to blood-borne pathogens transmitted are also associated to the psychological trauma caused by waiting for the test results. In addition, other consequences may include changes in sexual behavior, the effects of prophylactic drugs, and losing one's job⁽³⁾.

The high number of percutaneous lesions in health workers proved the severity of the issue and triggered the development of specific American law, ruled by the Occupational Safety and Health Agency⁽⁴⁾. In Brazil, despite the fact that health practitioners' activities involve the risk for this type of accidents, it is observed that many hospitals deal with the difficulty of diagnosing the real magnitude of the issue and of adopting preventive measures.

Literature shows that several factors can be associated to the occurrence of occupational accidents. The main ones, however, are those related to inadequacies in the organization and activities at work, in the available material, personal factors, and the workers' and employers' failure to adopt preventive measures⁽⁵⁾.

In the case of health workers, the main factor is inadequate work organization, since they work in shifts, handle rather dangerous instruments, they often fail to use individual protection equipment, they work at a fast pace, and with no intervals during their shift⁽²⁾. Furthermore, there is evidence that people continue turning to non-recommended behavioral practices, despite the educational campaigns and programs⁽⁶⁾.

Adopting preventive measure is still considered the best strategy to minimize the occurrence of accidents with percutaneous lesions.

Considering the complexity and the range of factors

interfering on the occurrence of occupational accidents, there is a need to think about possible ways of intervention⁽⁷⁾. These ways might be articulated to models that represent settings for participative, constructive practices toward the autonomy of individuals and the community, such as intervention models⁽⁸⁾.

The care or intervention models combine techniques and different technology to solve problems and meet individual and collective health needs. Hence, they can be relevant in the occupational health area, since they point at a certain form of making the existing scientific technical means available for an intervention on risks and hazards, incorporating a rationale that guides the interventions⁽⁹⁾. The explanatory health promotion models, on the other hand, are supported by the group of practices and knowledge that influence health care services⁽¹⁰⁾. These models allow for establishing comparative analyses between the different cultures and treatment systems⁽¹¹⁾, and can be classified in two categories: models centered on decision-making and on individual behavior, and those that permit the interaction between individuals and service providers⁽¹²⁾.

Using explanatory and intervention models in the field of occupational health promotion permits to understand the problem determinants more easily and, thus, contribute with knowledge promotion, reflection, and decision in acting and caring. Therefore, it provides better chances to promote health promotion and disease prevention⁽¹³⁾.

Thus, professionals in the occupational health field should encourage and make health promotion actions feasible in an ethical way, critically and consciously assuming a political position to fight for health and workers' rights. They should encourage the adoption of specific preventive measures seeking support in interdisciplinary knowledge.

Taking this into consideration, this study sought the answer to the following thematic question:

What are the explanatory and intervention models used in occupational health promotion and in the prevention of occupational accidents with biological material?

OBJECTIVE

To find scientific evidence in the national and international literature regarding explanatory models of occupational health promotion and the prevention of occupational accidents with biological material.

METHODS

This is a bibliographic research performed through consultations to the following databases: Banco de Dados de Enfermagem (BDENF), Cumulative Index to Nursing

& Allied Health Literature (CINAHAL), Web of Science (ISI), Electronic Index Medicus of the National Library of Medicine (MEDLINE), Literatura Latino-Americana do Caribe em Ciências da Saúde (LILACS), and the Scientific Electronic Library Online (SciELO). The integrative review technique, proposed by Ganong⁽¹⁴⁾, was used and a systematic survey of the studies published in the period from 1986-2006 was performed.

The descriptors used to find the articles were the following: “health promotion models”, “health promotion”, “occupational health”, “professional diseases”, “occupational accidents”, and “biological risk”. In addition, articles were included in the study according to the following criteria: articles written in Portuguese,

English, and Spanish, having the abstracts available for identification, and full text articles for the analysis phase.

A tool was designed with the following information: identification of the author, profession, field of work; indexation base; population/sample; location, objective; methodological outline; type and features of the of the model used, main results and conclusions. The referred tool underwent validation by three researchers from the Occupational Health area, regarding the content, clarity, and objectivity, and was considered appropriate for the study.

RESULTS

A total 1352 articles were found in the initial search,

Chart 1 – Article authors, institutions they work at, year of publication, country, name of the journal, and study outline

Authors	Author's institution	Year	Country	Journal	Study outline
Santos Zapparoli, Palucci Marziale, Carmo Cruz Robazzi ⁽¹⁵⁾	Universidade de São Paulo	2006	Chile	Ciencia y enfermería	Qualitative Exploratory
Mendes, Fortuna, Porto, Ferreira, Kemura, Tocio ⁽¹⁶⁾	Universidade de São Paulo	1994	Brasil	Rev. Latino-Am. Enfermagem	Qualitative Exploratory
Savoldi, Neves, Santos, Mauro ⁽¹⁷⁾	Universidade Estadual do Rio de Janeiro	2003	Brasil	Escola Anna Nery Revista de Enfermagem	Quantitative Exploratory
Manetti, Costa, Marziale, Trovó ⁽¹⁾	Universidade de São Paulo	2006	Brasil	Revista Gaúcha de Enfermagem	Quantitative Exploratory
Dejoy, Searcy, Murphy, Gershon ⁽¹⁸⁾	Universidade da Georgia	2000	EUA	J. Occupational Health Psychology	Quantitative Exploratory
Brevidelli, Cianciarullo ⁽¹⁹⁾	Universidade de São Paulo	2002	Brasil	Revista de Saúde Publica	Quantitative Exploratory
Lusk,Ronis,Kerr,Atwood ⁽²⁰⁾	Universidade de Michigan	1994	EUA	Nursing Research	Quantitative Exploratory
Lusk, Ronis, Hogan ⁽²¹⁾	Universidade de Michigan	1997	EUA	Research in Nursing & Health	Quantitative Exploratory
Lusk,Hong,Ronis, Eakin ⁽²²⁾	Universidade de Michigan	1999	EUA	Human Factors	Quantitative Exploratory
Godin, Naccache , Morel, Ebacher ⁽²³⁾	Universidade de Laval	2000	Canadá	American Jomal Infect Control	Quantitative Exploratory
Godin G, Naccache H; Fortin ⁽²⁴⁾	Universidade de Laval	1998	Canadá	American Jomal Infect Control	Quantitative Exploratory

Chart 2 – Distribution (%) of articles according to the model used

Brief description of the model	Frequency
Health Promotion Model by Nola J. Pender , which was developed in the 1980s, has behavior as the basis for health promotion, and identifies the factors that affect healthy behaviors ⁽¹³⁾ .	36.4%
Model by Green & Kreuter , which is defined by the combination of educational and environmental supports, actions and life conditions towards health. These actions refer to individuals, groups or communities, as well as to the political and organizational aspects that affect the individual's health-determining factors and quality of life ⁽¹⁾ .	18.2%
Behavior Planning valid to identify health behavior determinants ⁽¹⁷⁾ . According to this mode, intention is outlined by personal attitudes, the perception of social models, and the perception of behavior management ⁽¹⁸⁾ .	18.2%
Health Belief Model states that the preventive behavior depends on the perception of susceptibility, severity, benefits, and barriers. These is also a need for encouragements toward the action that helps the individual develop the stages regarding the perception of susceptibility and severity. In addition, it motivates individuals to act ⁽¹⁹⁾ .	9.1%
Roy Adaptation Model . The person is seen as a system and subject to environmental stimuli, both internal and external. It has the purpose to promote the adaptation of individuals in four adaptive models: physiological, self-concept or group identity, role function, and interdependence ⁽²⁵⁾ .	9.1%
Blum Epidemiological Model , in which the social environment can have an important curative role and the existence of health service can have a preventive function ⁽¹⁶⁾ .	9.1%

which resulted in a final 85 after refining. The abstracts of those 85 articles were read. Of these, 11 articles were related to the central theme of the present study, and were, therefore, read in full and analyzed individually.

Of the selected articles, 36.4% were published in periodicals edited in Brazil, and 63.6% in international journals. As to the database, 54.5% of the articles were identified in MEDLINE, 18.2 in SciElo, and 27.3% in the LILACS database. Chart 1 presents information regarding the authorship and outline of the published studies.

Chart 3 – Articles per model and use purpose

Articles	Model used	Health Promotion	Preventing occupational accidents
1	Pender		X
2	Blum	x	X
3	Roy	x	
4	Green & Kreuter	x	x
5	Green & Kreuter		x
6	Health beliefs		x
7	Pender		x
8	Pender	x	
9	Pender	x	
10	Behavior Planning	x	x
11	Behavior Planning	x	x

DISCUSSION

Based on the analysis of the obtained results, it was observed that a small number of studies use theoretical intervention and explanatory models for promoting health at work, especially in terms of the prevention of occupational diseases and occupational accidents involving biological material. Nevertheless, among the results obtained in the studies using intervention models, it was possible to identify that its use was effective.

The studies mostly used a non-experimental, exploratory research design and a quantitative analysis of the data (81.8%). Qualitative approach was used in 18.2% of the studies.

The results described in the articles in which explanatory models were used showed that investing in health promotion at work locations motivates workers, reduces absenteeism, personal problems, workers competition, promotes greater effectiveness and improves performance. These factors reinforce the need for investing in research that uses health promotion models in the work environment.

Most studies were performed by nurses. This shows that the field is coming closer to the practice of testing scientifically structured models, a practice that is much explored in other fields of knowledge to improve the quality of the studies.

In the analyzed studies, the most used framework was

All the identified studies sought to use models of occupational health promotion and/or of occupational accident prevention, but six articles (54.5%) specifically referred to the prevention of occupational accidents involving exposure to biological material, and the models used were: Green & Kreuter, Pender, and Behavior Planning.

Chart 3 shows the list of studies, the model used and its application in the promotion of health and in the prevention of occupational accidents and occupational diseases.

the Pender model⁽¹³⁾, which is based on people's behavior change, with a view to health promotion, and used in studies as a strategy for the prevention of occupational accidents and diseases, encouraging workers to adopt safe work behaviors and individual protection equipment.

The Green & Kreuter⁽¹⁾, Pender⁽¹³⁾, and Behavior Planning⁽¹⁵⁾ models were the most appropriate as a strategy to prevent occupational accidents with exposure to biological material. However, the survey on the first study phase revealed other models used for health promotion, which should be the focus of further studies. Those models are:

Brandura Model: based on self-effectiveness. Refers to the individual's beliefs about his or her ability to organize and make the necessary actions to produce certain results⁽²⁶⁾.

King Model: based on three interactive systems, the personal, the interpersonal, and the social. It is supported by the idea that the goal in nursing is to help individuals to maintain their health so that, this way, they can perform their roles positively. Any change in one of the three systems can affect the others and health or disease is established by their interaction. The objective is to help humans to remain healthy⁽²⁷⁾.

Social Ecological Theory: the mains presuppositions are: individuals' wellbeing is affected by multiple factors of the physical and social environment; health and health promotion analyses should focus on the

multidimensional and complex nature of human environments; the environments can be described in terms of their complexity, the individuals inserted in these settings should be studied in different ambits; the relationships between individuals and environments are characterized by mutual influence cycles and interdependence, in a way that the physical and social aspects of the environment have a direct effect on the individuals' health and they change the environment through their individual or collective actions⁽²⁸⁻²⁹⁾. The most expressive multidimensional intervention actions can be seen in the documents, *Healthy People 2000* and *Healthy People 2010*, developed by the North-American government with the purpose to determine objectives and action priorities to promote health and improve the quality of life of the North-American people⁽³⁰⁻³¹⁾.

CONCLUSION

This study showed that the intervention models can be used successfully to promote health and prevent work-related diseases and accidents.

The Pender, Green & Kreuter, Behavior Planning and Health Beliefs were the models used for health promotion

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