Home care: health professionals at risk for biological exposure

INTERNAÇÃO DOMICILIAR: RISCO DE EXPOSIÇÃO BIOLÓGICA PARA A EQUIPE DE SAÚDE

INTERNACIÓN DOMICILIARIA: RIESGO DE EXPOSICIÓN BIOLÓGICA PARA EL EQUIPO DE SALUD

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ABSTRACT

This prospective, exploratory study was performed using a quantitative approach with the objective of characterizing the healthcare tasks that involved biological risk for professionals working with the Home Care Service of the São Carlos Municipal Hospital (São Carlos, SP, Brazil). We followed 159 visits from June 2008 to January 2009. A total of 347 procedures were considered to present risks for biological exposure, categorized as follows: dressings (31.1%), capillary blood glucose monitoring (14.4%); and vascular access (3.1%). Of all subjects, 21.5% complied with hand cleansing prior to performing a procedure, 66.3% wore gloves and 83.5% disposed of sharps appropriately. In conclusion, these professionals are subject to biological risks similar to those found in the hospital environment, because they are also exposed to blood and sharps often and have a poor adherence to the standard preventive measures. Further studies to evaluate the influence of the features of the household on the referred risk should be encouraged.

DESCRIPTORS

Occupational risks
Home nursing
Occupational health
Nursing
Universal pracautions

RESUMO

Estudo exploratório e prospectivo, de abordagem quantitativa que visou caracterizar as ações que envolviam risco biológico durante o atendimento de profissionais no Serviço de Internação Domiciliar do Hospital Municipal de São Carlos, SP. No acompanhamento das 159 visitas, realizadas no período de junho de 2008 a janeiro de 2009, foram observados 347 procedimentos sendo que, entre os com risco de exposição biológica, foram identificados curativos (31,1%), glicemia capilar (14,4%) e acesso vascular (3,1%). A ocorrência de adesão à higienização prévia das mãos foi de 21,5%, 66,3% no uso de luvas e de 83,5% no descarte adequado do perfurocortante. Conclui-se que esses profissionais estão sujeitos a riscos semelhantes aos encontrados na área hospitalar, uma vez que também manipulam sangue e material perfurocortante com muita frequência e apresentam baixa adesão às precauções padrão. Estudos que avaliem a influência das características dos domicílios nesse risco devem ser estimulados.

DESCRITORES

Riscos ocupacionais
Assistência domiciliar
Saúde do trabalhador
Enfermagem
Precauções universais

RESUMEN

Estudio exploratorio prospectivo, de abordaje cuantitativo que objetivó caracterizar las acciones que involucran riesgo biológico durante atención de profesionales en Servicio de Internación Domiciliaria de Hospital Municipal de São Carlos-SP. En seguimiento de las 159 visitas realizadas entre junio 2008 y enero 2009, fueron observados 347 procedimientos. Entre aquellos con riesgo de exposición biológica se identificaron curativos (31,1%), glucemia capilar (14,4%) y acceso vascular (3,1%). La adhesión a la higienización previa de manos fue de 21,5%, 66,3% en el uso de guantes y 83,5% en descarte adecuado de material punzocortante. Se concluye en que tales profesionales están sujetos a riesgos semejantes a los encontrados en el área hospitalaria, toda vez que manipulan sangre y material punzocortante con alta frecuencia e presentan baja adhesión a las precauciones estándar. Deben estimularse estudios que evalúen la influencia de las características de los domicilios en tales riesgos.

DESCRIPTORES

Riesgos laborales
Atención domiciliaria en salud
Salud laboral
Enfermería
Precauciones universales

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INTRODUCTION

The risks of transmitting pathogens, particularly the AIDS and Hepatitis B and C viruses, present in health care provided in hospitals, are well known[1]. However, with the advent of new modalities of care, such as home care, the extent of such risks has not yet been dimensioned.

The aging of the population, the chronic nature of many diseases, the need to ensure the continuity of care and the high cost of hospital care indicate the need to devise new practices, new spaces and work processes, including day hospitals, home hospitalization, home care and preparation for self-care, incorporated into the preexistent knowledge of families and communities[2-3].

Home hospitalization is regulated by decree No. 2,416 March 1998, which establishes the requirements for accrediting hospitals for in assisting home care and the profile of the population that should be cared for[4]. A multidisciplinary team provides care through daily visits and a permanent nursing professional may be required in pre-established hours[3,5].

Home care brings with it contexts so far unknown. One of these new facets are the potential changes in techniques and procedures in health care performed outside of an institutional facility. The use of needlestick material (i.e. administration of medication or blood collection) or procedures with the potential contact with body fluids (large bandages, manipulation of drains, among others) require adaptations in their implementation processes, whether given the environment's physical requirements or the characteristics of the patient or caregiver.

The risks of transmitting pathogens accruing from such care and potential adaptations are not known. The recommendation is that the control of infections in home care should include both preventive and educational actions such as guidance on biosafety and accident prevention, isolation and precautions at home, care with medical and nursing equipment in relation to cleaning and disinfection[5]. The main action recommended to reduce risks of occupational exposure is the adoption of Standard Precautions (SP)[6-7].

International literature has not provided many assessments of the risks of the transmission of pathogens in extra-hospital environments. Studies emerged in recent years to evaluate such a risk, especially in long stay institutions for elderly individuals and the homes of chronic patients[8-9]. Control of infection outside of the hospital environment is considered a frontier of knowledge in the field and research aiming to pass this barrier should be encouraged[10].

This study is intended to characterize actions involving potential contact with biological material performed in Home Care Services (HCS) and identify the risks of exposure to microorganisms involved in this practice to contribute to the advancement of knowledge in this subject.

METHOD

This exploratory and prospective study with a quantitative approach was conducted between June 2008 to January 2009 in which health actions performed by the multidisciplinary team of the HCS of the City Hospital of São Carlos involving the risk of the transmission of microorganisms were observed during home visits. The number of visits ranged from one to 20 visits per patient. This large diversity is due to the way data were collected. In one period of the study, visits were accompanied twice a week and in the other period, once a week.

The recommendation is that the control of infections in home care should include both preventive and educational actions such as guidance on biosafety and accident prevention, isolation and precautions at home, care with medical and nursing equipment in relation to cleaning and disinfection.

The study was approved by the Ethics Committee Concerning Research Involving Human Subjects (Process 263/2008).

Nursing workers (nurse and nursing technician), a physiotherapist, a physician, a social worker and an HCS psychologist at the mentioned hospital participated in the study. Data were collected through observation of the team's actions and recorded in an instrument developed by the authors, which addressed the professionals' adherence to SP, such as hand washing, use of gloves and protective goggles and how needlestick material was discarded during each procedure. Data were analyzed with descriptive statistics (frequency).

RESULTS

A total of 159 visits performed by the team to 37 patients in home care were accompanied, totaling 294 hours of observation. These patients were on average 63 years old, 29 (78.4%) had some level of dependency and 23 (62%) were men. A total of 347 procedures were observed, 31.1% dressings, 28.2% vital signs, 15.6% physical assessment, 14.4% capillary blood glucose, 2.6% aspiration of airways, 2% physiotherapy procedures, 1.7% intravenous hydration, 1.4% blood collection, 0.9% nasogastric tube (NGT) installation, 0.9% indwelling catheter (IC), 0.6% enema, 0.3% NGT hydration, and 0.3% change of tracheostomy tube (Figure 1).

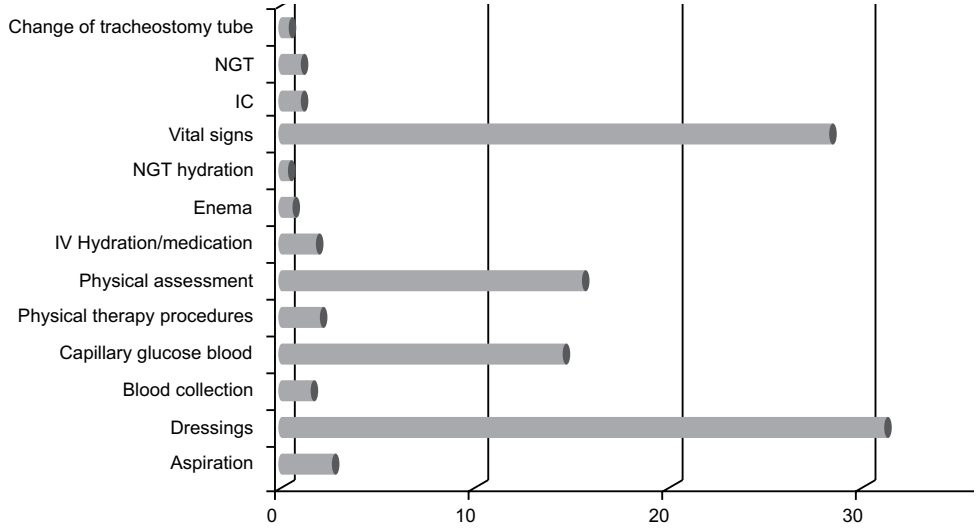

Figure 1 – Distribution of procedures observed during visits to patients in Home Care – São Carlos, SP, Brazil – 2009

In relation to the characterization of procedures with a potential risk of biological exposure, there was a predominance of dressings, with 31.1% of the total of procedures observed. Hand washing was observed only when professionals arrived at and left the homes in which they were providing care (Table 1).

Table 1 – Adherence to hand washing by professionals when arriving at and leaving homes – São Carlos, SP, Brazil - 2009

	Alcohol at 70%		Soap and water		Total de Visits
	Arrival at home	Leaving homes	Arriving at the home	Leaving the home	
Nursing technician	3	28	4	20	91
Nurse	30	58	13	36	139
Physician	0	0	0	1	3
Physiotherapist	1	0	4	6	8

Hand washing (soap and water or alcohol at 70%), the use of gloves, and appropriate disposal of needlestick material contaminated were observed by procedure (Table 2).

Table 2 – Adherence to hand washing, use of gloves and disposal of contaminated and needlestick material by procedure – São Carlos, SP, Brazil – 2009

Procedures	Nº of observations	Appropriate hand washing		Use of gloves		Discard needlestick and contaminated material	
		Yes	No	Yes	No	Yes	No
Aspiration	9	6	3	9	0	9	0
Dressing	108	42	66	108	0	106	2
Blood collection	5	2	3	4	1	5	0
Capillary blood glucose	50	7	43	10	40	38	12
Physiotherapy procedures	7	7	0	6	1	7	0
Physical assessment	54	12	42	14	40	-	-
IV hydration/medication	6	2	4	5	1	6	0
Enema	2	1	1	2	0	2	0
NGT hydration	1	1	0	0	1	-	-
Vital signs	98	16	82	-	-	-	-
IC	3	0	3	3	0	3	0
NGT	3	0	3	3	0	3	0
Change of tracheostomy tube	1	0	1	1	0	1	0

A total of 108 dressings were performed: appropriate hand washing was not observed in 61.1% of the procedures; gloves were not used to perform capillary blood glucose in 80% of the times. Contaminated material was not properly disposed of in only 4% (twice during dressings and 12 times during capillary blood glucose) of the total procedures and professionals kept gloves on in approximately 77.8% of the physical assessments.

Gloves were used 100% of the time when professionals performed dressings, though in 66.7% of the cases, gloves were used to replace dressing material, that is, the professionals were not using instruments. Also, sometimes after finishing the bandage, the professionals kept the same gloves on and performed other procedures. In the remaining cases, the gloves were used as a measure of individual protection.

Characteristics of the dressings and potential risks of exposure to biological material are described in Table 3.

Table 3 – Stages observed during dressings - São Carlos, SP, Brazil - 2009

Stages	Yes	%	Not	%
Use of dressing material	35	32.4	73	67.6
Use of gloves	108	100	0	
Dressing were performed only with gloves on	73	67.6	35	32.5
Use of needlestick material (scalpel, needles)	108	100	0	
Discarding of needlestick material after procedure	92	85.2	14*	14.8

* transported to the city hospital in a resistant plastic container

Contaminated but not sharp material was disposed once in the house's garbage and transported to the city hospital in a white plastic bag in 107 occasions. Inappropriate disposal of lancets was observed in 24% of capillary blood glucose and needles in 20% of blood collections; that is, they were transported to the hospital in a temporary container.

In relation to the type of catheter for vascular access, a metal catheter was used in three situations and a plastic catheter in another four; an epidural catheter was also used to administer medication. Another relevant aspect is that a syringe and needle were used to collect blood even though the vacuum collection system was available.

Aspirations were performed with surgical masks and sterile gloves without the concomitant use of protective goggles in 55.6% of cases. In general, the professionals washed hands before activities 21.5% of the time and after performing the activities in 61.8% of the visits. The use of gloves occurred in 66.3% of the occasions that would require them. However, gloves were used only in 14% of the capillary blood glucose tests. Disposal of needlestick material was appropriate in 83.5% of the observed cases and protective goggles were not used in any of the situations that required them.

DISCUSSION

This study's results and the literature available reinforce the view that home care is an alternative that especially benefits elderly individuals with impairing diseases, who depend on the help of others for prolonged periods and tend to remain isolated in their homes[11].

The frequency of visits varied according to the needs of patients and the activities of health workers. Nursing professionals are usually those who remain most of the time with patients, whether providing direct care or instructing caregivers who provide care at home[11-12]. Such a statement explains the variation in the quantity of visits performed by each professional and indicates the high participation of the nursing team, especially nurses, as shown in Table 1.

One aspect observed is that almost 80% of the patients had some level of dependency. The degree of dependency of a patient in relation to nursing services can be established through classification instruments internationally recognized and adapted to the Brazilian context, to identify workload and support how nursing personnel is assigned for this modality of care[11]. The high frequency of patient visits by the nursing team and the constant manipulation of needles corroborate data reported in the literature that confirms this professional is the most exposed to biological risks[6-7].

We verified during the studied period that care is predominantly provided to men (62%) older than 60 years of age. In relation to age, the literature corroborates the results found due to the increased expectation of life in Brazil and the prevalence of chronic diseases at this age, making these patients more likely to require home care, mainly due to the great difficulty of maintaining mobility that many experience, arising from senescence and senility[12-14].

Dressings corresponded to 31.1% of the procedures performed and can be related to the high degree of dependency presented by these patients, which lead to Pressure Ulcers (PU). Immobility is one of the factors that determine the development of PU[14].

Applying dressings to PUs involves the risk of exposure to blood and other fluids via the eyes and mouth through spills. Additionally, specifically in these dressings, scalpels are frequently used to remove devitalized tissue, which associates the procedure with the risk of needlestick-type of injuries both while manipulating and disposing of the material. According to a Brazilian study, scalpel blades accounted for 4.8% of needlestick injuries that occurred in non-hospital facilities[15].

Type 2 diabetes is associated with problems that restrict or even limit the daily life activities of patients in HCS. Diabetes is a frequent clinical situation affecting more than 7% of the Brazilian adult population 30 to 69 years old. The peak incidence is reached around 60 years

of age, while 20% of the cases occur among the Brazilian population older than 70 years of age[16].

This study shows that capillary blood glucose corresponded to 14.4% of the procedures, a fact expected given the distribution of diabetes[16] among the age group cared for by HCS. The use of lancets instead of needles with lumen in 100% of the cases is a protection factor for professionals, minimizing the risk of needlestick accidents[21]. However, non-adherence to glove use and inappropriate disposal of lancets need to be addressed. A study conducted in Family Health Units in the same region corroborates these findings, reporting the use of lancets in 100% of the cases, appropriate disposal in 66.7% and the use of gloves in only 30.3% of the cases[17].

The mistakes observed in relation to the disposal of needlestick material in 16.5% of cases, such as the use of a temporary container for disposal and the transference of blood from the syringe to the test bottle, which add stages to the process, greatly increase the risk of exposure of professionals. Disconnecting needles from the syringe, actively recapping needles, transporting or manipulating unprotected needles, which generate the risk of accidental punctures among professionals, are factors that increase the risk of exposure inherent to the procedures[18-20].

Another important aspect to reduce the risk of exposure on thee part of professionals when handling needles is the adoption of needlestick material with safety devices. Brazil took a great step toward the protection of workers' health with the creation of regulatory standard 32 MTE/2005, which among other guidelines, make the use of such devices mandatory [21].

It is apparent in this context that hand washing among health workers is the main measure to interrupt the cycle of cross infection[5] and did not occur in 77.2% of the instances when professionals arrived at the homes and 38.2% of the time when leaving homes. Deciding how to clean hands (soap, antiseptic soap or alcohol) should take into account the type of contact, degree of contamination, the patient's conditions and procedure(s) to be performed[22]. However, despite the many ways available to wash hands, studies show that health workers respond in a dissatisfying manner to hand washing recommendations[7,17]; they fail to perform hand washing in 60% of the occasions it is indicated as needed[22].

Non-adherence to protective goggles in situations when there is a risk of contact with the face, such as when aspirating airways, is corroborated by the literature in reports of low levels of adherence to this protection measure[23].

CONCLUSION

The conclusion is that professionals, particularly nursing professionals working in Home Care Service, are exposed to biological material through mucosa, and non-intact and percutaneous skin, since they also manipulate needlestick material with greater frequency.

No accident with biological risk was observed in this study, though there were risk situations concerning the inappropriate disposal and manipulation of needlestick material and blood, non-adherence to the use of gloves and protective goggles. Hand washing was also less frequent than what is recommended.

The characteristics of the households such as physical area, resources to accommodate the patients, which can either facilitate or hinder the performance of procedures, and adherence to precautions should be the object of future studies.

These results contribute to broaden knowledge concerning the biological risk existing in health care, particularly in service provided in home care.

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