



The essentialy of nursing and the challenge of using microplastics in hospitals

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Nursing professionals are essential to the development of health care, since without them, a functioning and effective healthcare system would not be possible. They are trained in the art of providing care, and this “care” means a series of steps that range from the simplest tasks, such as obtaining vital parameters, moving patients, and offering oral medication, to the most complex, such as collecting biological material for analysis, clinical examinations of patients, preparing and controlling intramuscular and intravenous medication, close monitoring of the signs and symptoms presented by the people receiving care, and so on.

Within hospital settings, there is a constant use of plastic materials and equipment. Thus, intravenous infusion bags, disposable gloves, masks, syringes, biological material collection containers, diapers, mattress protectors, intravenous administration systems, other disposable protective equipment, among others, compose a universe full of plastic elements that these professionals face on a daily basis.

Composed of complex and highly heterogeneous synthetic chemicals, more than 98% of plastics are produced from fossil carbon (coal, oil, and gas); their composition consists of a carbon-based polymer structure and a range of chemicals incorporated into the polymers to confer specific properties to them, such as color, flexibility, stability, water repellency, resistance to fire and ultraviolet rays ⁽¹⁾. These materials accumulate in oceans and harm marine life and, when in soil, they also harm animal and plant life. Plastic particles with a diameter of less than 5 mm, known as microplastics, result from the fragmentation of larger plastic waste and can be considered ubiquitous contaminants ⁽²⁾ practically everywhere on the planet.

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Therefore, a series of materials and equipment containing plastics are handled during nursing shifts and, to date, no scientific work that explores the possible problems that all this handling can cause for the workers in question has been found, even though it is known that human beings are potentially exposed to them through oral ingestion, inhalation, as well as skin contact ⁽¹⁾.

Studies have shown that particulate plastic material has been found in humans in the placenta ⁽³⁾; in the gastrointestinal, circulatory ⁽⁴⁾, and respiratory systems ⁽⁵⁾; in breast milk ⁽⁶⁾; in the stomach; in neurons ⁽⁷⁾, even showing a possible association with the etiology of autism spectrum disorders and attention deficit/hyperactivity disorder ⁽⁸⁾, among numerous other problems.

Given their massive and widespread presence in a wide range of environments and their deleterious effects on human health, plastic particles can be found in workplaces, having been found in coal miners, oil and gas field personnel, workers in plastic production ⁽⁹⁾ and recycling, shoe production, as well as in housekeepers, laundry workers, office workers, van drivers, street vendors, maintenance technicians at wastewater treatment plants, and waste sorting personnel at universities and in the market ⁽¹⁰⁾, among others. Regarding healthcare and nursing professionals, there is an urgent need for studies aiming to identify the presence of this particulate matter and its effects, especially for those who work in hospital settings.

The use of plastics in hospitals is an environmental and public health challenge. There is a need to discuss the implementation of sustainable strategies to minimize their negative impacts, including on the health of those who work in these settings. Nurses, as an essential workforce engaged in providing care, have a crucial role in promoting more sustainable practices within healthcare institutions, in addition to their need for learning to know more about the theme in order to be safer in their workplace.

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