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REFLECTIVE ANALYSIS ARTICLE

HUMAN ERROR AND SAFETY CULTURE IN APPROACH OF THE "SWISS CHEESE'S" THEORY: A REFLECTIVE ANALYSIS

ERRO HUMANO E CULTURA DE SEGURANÇA À LUZ DA TEORIA "QUEIJO SUÍÇO": ANÁLISE REFLEXIVA

ERROR HUMANO Y LA CULTURA DE LA SEGURIDAD A LA LUZ DE LA TEORÍA "QUESO SUIZO": UN ANÁLISIS REFLEXIVO

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ABSTRACT

Objective: to present a theoretical essay about the "Swiss cheese's" Theory. **Method:** a descriptive study, reflective theoretical essay type, drawn from the Theory of "Swiss cheese", proposed by James Reason. **Results:** 1) The theory of the "Swiss cheese" shows how the disruption of the defenses by a history of failure can lead to error; 2) Patient safety in light of the Theory of "Swiss cheese": the work on the conditions that the human being works produces defenses in the system, reducing errors; and, 3) The emergence of a new paradigm: security culture, notification culture, justice and fairness, flexibility and learning make the culture of safety. **Conclusion:** the health system is in paradigmatic crisis with respect to patient safety. So, it is important to transition from punitive paradigm to another aimed at education professionals. **Descriptors:** Patient Safety; Health Systems; Culture; Health Personnel.

RESUMO

Objetivo: apresentar um ensaio teórico à luz da Teoria "Queijo suíço". **Método:** estudo descritivo, tipo ensaio teórico reflexivo, elaborado à luz da Teoria do "Queijo suíço", proposta por James Reason. **Resultados:** 1) A Teoria do "Queijo suíço" demonstra o quanto o rompimento das defesas por uma trajetória de falhas pode conduzir ao erro; 2) A segurança do paciente à luz da Teoria do "Queijo suíço": a atuação sobre as condições que o ser humano trabalha produz defesas no sistema, diminuindo os erros; e, 3) A emergência de um novo paradigma: cultura de segurança, cultura de notificação, justiça e imparcialidade, flexibilidade e aprendizagem compõem a cultura de segurança. **Conclusão:** o sistema de saúde encontra-se em crise paradigmática no que concerne a segurança do paciente, portanto, é relevante a transição do paradigma punitivo para outro voltado à educação dos profissionais. **Descritores:** Segurança do Paciente; Sistemas de Saúde; Cultura; Pessoal de Saúde.

RESUMEN

Objetivo: presentar un ensayo teórico acerca de la teoría "Queso suizo". **Método:** este es un estudio descriptivo y reflexivo, del tipo de ensayo teórico, elaborado a la Teoría del "Queso suizo", propuesto por James Reason. **Resultados:** 1) La teoría del "queso suizo" muestra cómo la alteración de las defensas por una historia de fracaso puede conducir a error; 2) La seguridad del paciente a la luz de la teoría del "Queso suizo" - el trabajo en las condiciones que el ser humano funciona produce defensas en el sistema, reduciendo los errores; y, 3) La emergencia de un nuevo paradigma: la cultura de seguridad, la cultura de notificación, la justicia y la equidad, la flexibilidad y el aprendizaje constituyen la cultura de seguridad. **Conclusión:** el sistema de salud está en crisis paradigmática con respecto a la seguridad de los pacientes, por lo que es importante para la transición de paradigma punitivo a otro dirigido a profesionales de la educación. **Descriptores:** Seguridad del Paciente; Sistemas de Salud; Cultura; Personal de Salud.

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INTRODUCTION

The problem of human error and Patient Safety (SP) in the health system has been the subject of several studies, among them, there is the release of To report entitled err is human: building a safer healthcare system, published by the Institute of Medicine (IOM), considered milestone for SP in the world panorama.¹⁻²

The publication of the IOM showed that the number of deaths from errors in health care is greater than those related to motor vehicle accidents, breast cancer and Acquired Immune Deficiency Syndrome, combined. It is emphasized that, in the United States, about 98,000 people die each year due to failures in health care.³

Data released by the Hospital Information System of the Unified Health System (SIH/SUS) in 2011 show that there were 11,117,837 admissions in Brazil, with an estimated 844,875 (7.6%) AE. Of these, it is estimated that 563,575 (66.7%) were avoidable events, which contributed to the death of almost 40% of cases.⁴

Coupled to this reality, the issues related to Adverse Events (AE) and iatrogenic configured in a serious public health problem and involve all the world stage, as the risk and occurrence of these accidents have increased substantially in environments of health.⁵

AE are responsible for causing permanent damage and/or death and can occur for failures in the care process, the organization of services (structure) in the absence of leadership and/or attitudes that modify the existing realities in health institutions.⁶⁻⁷

Given this scenario, it is noticeable that, although the health care bring broad benefits to all involved, the occurrence of errors is possible, and patients can suffer serious consequences, including evolve to death. In view of this, researchers, managers and professionals began to demand greater concern with regard to SP, and this issue has become a priority in health.⁸

Thus, the SP may be defined briefly as reducing to an acceptable minimum, the risk of unnecessary harm associated with health care. And this damage relates to the impairment of structure (s) or function (s) of the human body, whether physical, social or psychological.⁹

Recognizing the magnitude of the problem, the World Health Organization established in 2004 the World Alliance for Patient Safety, which is focused on the development of programs and policies aimed at sensitizing and

mobilizing health professionals and the population to seek solutions that help. The problem of human error and Patient Safety (PS) in the health system has been the subject of several studies, among them, there is the release of to report entitled err is human: building a safer healthcare system, published by the Institute of Medicine (IOM), considered milestone for SP in the world panorama.¹⁻²

In the effectiveness of SP, from the dissemination of knowledge and development tools that make it possible to change the reality on the world stage.¹⁰⁻²

In response to this growing mobilization associated with the SP, emerges a new paradigm called safety culture model, which was designed by the United Kingdom National Health Service, Joint Commission for the Accreditation of Healthcare Organizations, Agency for Healthcare research and Quality and United States National Quality Forum.⁸

The ideas proposed by these organizations were about the accession of the health care safety culture in order to replace "guilt and shame" for a "rethink the care processes," the plan to anticipate the occurrence of errors before cause damage.¹³

The numerous AE and avoidable errors that occur in health services are strongly capable of generating irreparable physical disabilities and deaths, and this fact shows the importance of the theoretical discussion of this issue. In addition, the contribution to the occurrence of such events may be related to inadequate structure of health institutions, human resource deficiency and materials, ineffective communication between professionals, workload, and inadequate skills and knowledge for those who provide the service, or related to human error.^{4,11}

OBJECTIVE

- To present a theoretical test in the light of the theory of the "Swiss cheese".

METHOD

A Descriptive Study Type Reflective Theoretical Test, conducted on three topics, namely: 1) the theory of the "Swiss cheese"; 2) safety light to the patient's theory of "Swiss cheese" and, finally, 3) the emergence of a new paradigm: safety culture.

RESULTS AND DISCUSSION

♦ The theory of the "Swiss cheese"

James Reason, a psychology professor at the University of Manchester, UK, proposed a model that conforms to a paradigm focused on the analysis of events involving the PUs. This

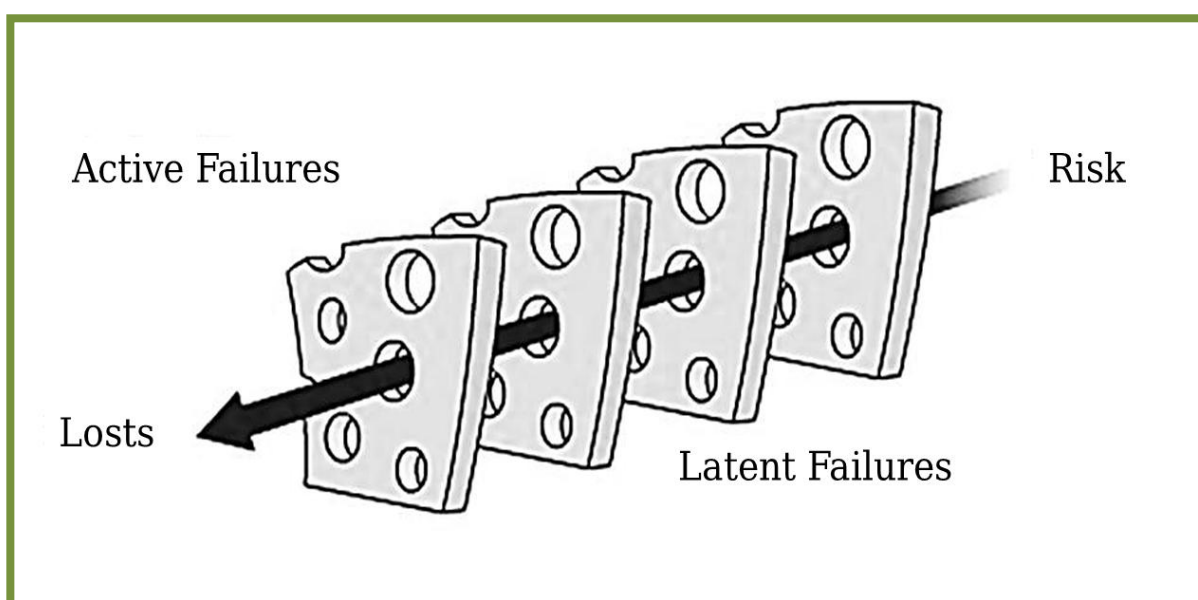
model, which is also known as the Theory of "Swiss cheese", compares the health system vulnerabilities to hole a Swiss cheese. The representation of this shows how the breaking of the defenses by a fault path can lead to occurrence of an error.¹¹⁻⁴

It is noteworthy that for the occurrence of error is necessary alignment of several holes (Figure 1). And each "Swiss cheese" is a stage of this complex system denominated: source of the problem, active faults and latent failures.^{11,15-6}

The source of the problem can often be triggered by multiple factors, such as structural or occasional failures, malpractice or neglect of health professionals, unsafe behavior or risky behavior by patients; active faults consist of unsafe acts or omissions

committed by health professionals, the consequences of which generate immediate adverse effects on the patient. These failures can take different forms, such as slips, lapses, losses, errors and violations of procedures; and the latent failures relate to existing problems in the system, resulting from decisions or actions taken before the accident, and are related to the structure and process in health services, which remain hidden until an event or accident occurs and expose them.^{11,15-6}

It is noteworthy that the active faults cannot be easily predicted; however, latent can be identified and corrected before an UAE occurs. This understanding enables the care management to be proactive rather than reactive.¹⁷



Source: Google images¹⁸

Figure 1. Model of the "Swiss cheese". Natal/RN, Brazil, 2016.

As shown in Figure 1, occurs when the alignment of the holes "Swiss cheese" EA affects the patient and the SP is immediately affected.¹¹ In view of this, denotes that the flaws in the SP have a multifactorial and depend not only on professionals, but also patients and especially health services with regard to the structure and processes available.

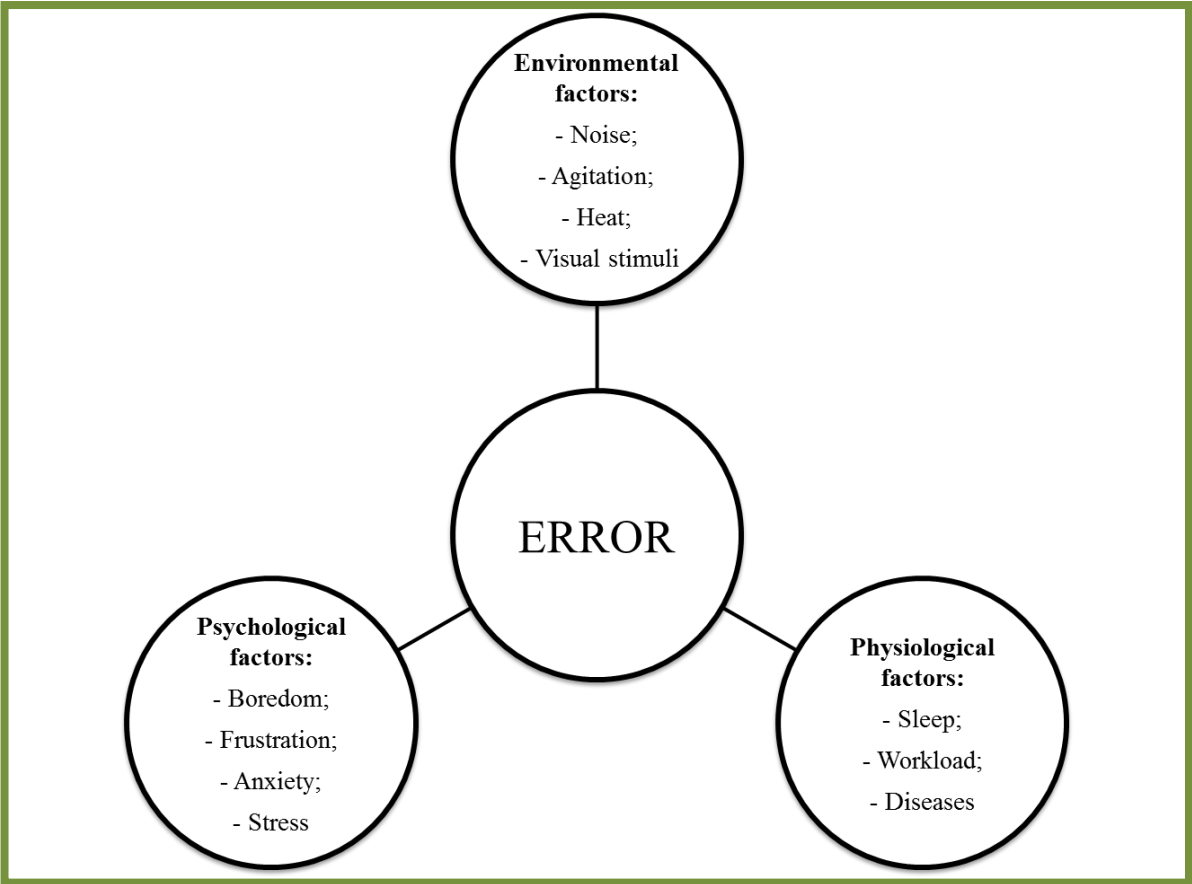
♦ Patient safety in the light of the theory of the "Swiss Cheese"

The current concept of SP associated with the theory of "Swiss cheese" indicates that the main factors (source of problems) responsible for the occurrence of EA, the deficiencies in the provision of health care system, the organization and functioning, rather than blame the professional or product alone.^{11,17}

Human error has focused on the individual and is based on the idea that human beings

are fallible and therefore prone to failure in their daily duties. Thus, although you cannot change the human condition, it is feasible to act on those which human beings work, in order to produce defenses in the system. With this, the error can be discussed under two personal and systemic perspective approach.^{17,19}

The personal approach, which is the active faults, is characterized by emphasizing the errors in the individuals directly involved in care, inferring that these errors are originated from mental processes, such as forgetfulness, inattention, lack of motivation, carelessness, negligence, imprudence and fatigue. In addition, it includes environmental and psychological factors as coadjutant's for the occurrence of errors,^{17,20-1} according to the above in Figure 2.



ACCEPTED: Adapted²⁰⁻²

Figure 2. Factors that contribute to the occurrence of errors. Natal/RN, Brazil, 2016.

In reference to systemic approach, which is consistent with the latent failures, one of the contemporary proposals to confront the error is the scholar,^{15-6,23} in that the error prevention measures are based on changes in the working conditions offered by health services. This systemic point of view considers the errors as consequences rather than causes, and are not associated with human error.¹⁷

The idea of systemic design is to provide the defense by creating a system of barriers and last ends, which operate in multiple stages of care, in order to avoid mistakes. And when they come to occur, the question arises "how" and "why" the defenses failed, no matter whom has committed,¹⁷ glimpsing the replacement of "shame and punishment" for safety culture.

So, it is understood that the complexity of healthcare organizations and the chain of systemic factors contribute significantly to the occurrence of EA. Such factors include: the strategies adopted by an institution, culture, work practices, quality management, prospecting risks and the ability to learn from mistakes.^{11-2,17}

In this light, reinforces the SP does not depend solely on professionals, one of the factors that ensure good quality of care is the administrative work process, that is, the routine of care, which starts from the disposal of materials use the professional training.²²

Although the professional is the last barrier following in health care, ie, it acts after alignment of all other system mechanisms, this should keep the attention in order to contribute to the effectiveness of SP. Thus, it is undeniable that the errors do not exempt the professional responsibility. However, the system must have protective measures so that the SP is preserved.²²

Faced with the proposition that to err is human, urges that the health care organization to be effective, in order to contribute to the Swiss cheese holes do not line up, with a view to providing a safe and care free of errors. From the understanding that it is possible the occurrence of these events, institutions should seek the accession of a new culture of SP and professional, quality management, risk management and learning from the mistakes made so that the feeling of guilt turn into actions that preserve the patient's life.²²

♦ The emergence of a new paradigm: safety culture

Health-care-related errors are culturally addressed punitive way, accusing the professional responsible for direct patient care. Most mistakes are made by committed and well-trained professionals; it is unlikely that sanctions prevent the occurrence of new errors. Thus, avoid exposing patients to risk situations depends on creating strategies that

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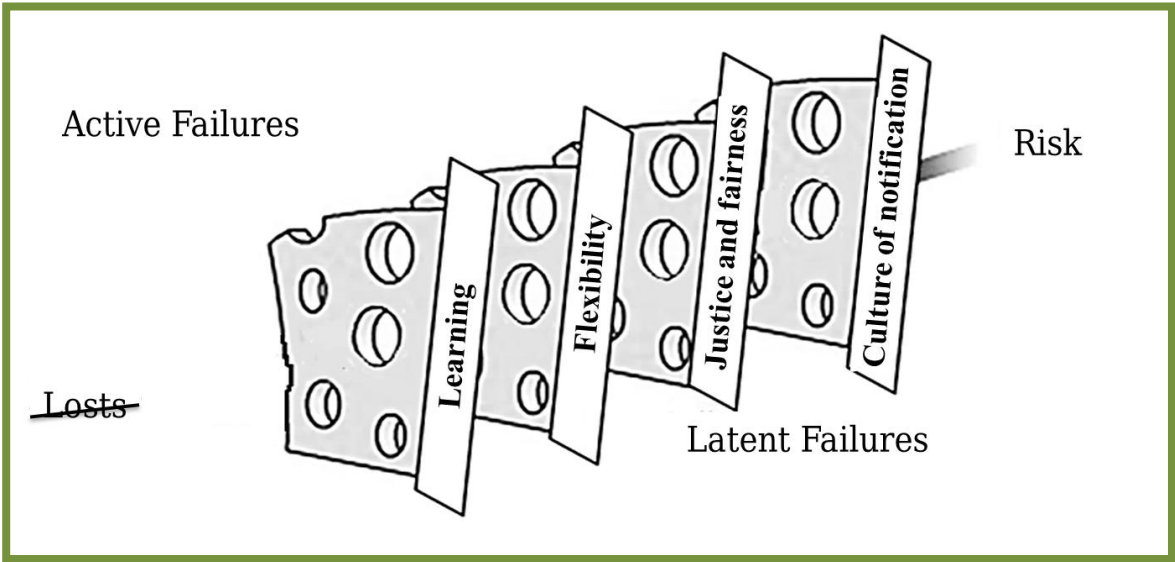
anticipate, prevent and block errors before they cause damage.²⁴

Thus, it is evident the need for the replacement of punitive paradigm for a culture to education, promotion and evaluation of health care. Hence the importance of the adoption of safety culture for health services, which consists of an emerging paradigm.^{1,8,11,25}

Safety culture is defined as the product of individual and collective values, attitudes, skills and behavior patterns, which can be based on their values and attitudes, which determine the commitment and style of an

organization. Given this, institutions that have a positive safety culture are characterized by mutual trust based on communication, sharing insight into the importance of security and belief in the effectiveness of preventive measures adopted.^{16,26}

In this sense, the safety culture consists of four main pillars: Notification culture, Justice and fairness, flexibility and learning,¹⁶ which act as barriers against the occurrence of AE in health, as shown in Figure 3.



SOURCE: Adapted^{15-6,18}
Figure 3. Elements of the culture of safety associated with the Swiss cheese model, Natal/RN, Brazil, 2016.

In this scenario, the safety culture must be built and grounded in the elements of interpersonal relationship, namely: trust, communication and cooperation. Since, individuals become more solicitous to provide information before an atmosphere of credibility and collaboration environment. On the other hand, a system of deficient information substantially compromises the safety culture, because, prevents learning from failures.¹⁶

FINAL NOTES

The Theory of "Swiss cheese" shows that the EA in health linked to human errors are in problems arising mainly from the structure and the process inherent to the health services themselves, being represented by the Swiss cheese holes, which are weaknesses of the system. In this context, the errors can also be derived from mental processes; environmental, psychological and/or physiological factors; and working conditions offered by health institutions.

Thus, it denotes that the health care system is in a moment of crisis paradigm with

respect to SP. It is clearly visible the importance of the transition from punitive paradigm to one that is focused on the education of professionals. Hence there is an urgent need to adopt vehement safety culture for health services.

It is emphasized that this new cultural approach will provide healthcare institutions a safer environment, aiming at: the effective communication between professionals; proactivity front of the EA that may happen, providing thus the feasibility of a culture for the reduction of accidents linked to human error; and, notifying AS, encouraged by a non-punitive culture, but that adds to learning based on mistakes.

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