Assessment of Regret Intensity among Critical Care Nurses

Marawan Salah Zaki Hassan, demonstrator
Nursing Administration Department, Faculty of Nursing, Alexandria University

Azza Hassan Mohamed Hussein, Emeritus Professor
Nursing Administration Department, Faculty of Nursing, Alexandria University

Marwa Abd El-Gawad Ahmed Mousa, Assistant Professor
Psychiatric and Mental Health Nursing Department, Faculty of Nursing, Alexandria University

Corresponding Author: Marawan Salah Zaki Hassan, Faculty of Nursing, Nursing Administration Department.

Email: smarawan732@gmail.com.

Article History:
Received:8/2/2025
Revised: 10\2\2025
Accepted: 26\2\2025
Published: 1\5\2025

Abstract

Background: In the context of patient care, regret is the second most common negative emotion among healthcare personnel. Regret is substantial because it can result in serious consequences including sleep deprivation, prolonged sick absence, employee turnover, and serious problems with patient care and organization. ***Objective:*** The study aimed to assess regret intensity among critical care nurses. ***Settings*****:** This study was conducted in all critical care units (N=23) within one Egyptian university hospital. ***Subjects:*** Two hundred eighty nurses in the previously mentioned units were conveniently selected. ***Tools*****:** One tool was used to collect the necessary data namely Regret Intensity Scale (RIS-10). ***Results:*** The study showed that 60.1% of nurses experienced a moderate level of regret intensity, 27.7% of them experienced a low level of regret intensity, and 12.3% experienced a high level of regret intensity, with a mean of regret (2.95 ± 0.55). ***Conclusion:*** understanding and managing regret is essential for improving both healthcare delivery and nurses' well-being. ***Recommendations*****:** reducing regret among nurses requires a supportive work culture that encourages open communication, continuous learning, and collaborative problem-solving. Enhancing access to training and resources that build resilience, and emotional intelligence can empower nurses to manage regret constructively,

Keywords:

Critical Care Units, Nurses, Regret Intensity

Introduction

Regret is an unpleasant emotion of self-blame based on the comparison that people feel when they realize or think their current circumstances would have improved if they had taken a different course of action in the past (Matarazzo et al., 2021). Even in cases where a suitable choice is made, people who make quick decisions or lack sufficient knowledge often regret their choices (Okimura & Hayashi, 2023). A variety of unfavorable feelings, including disappointment, dissatisfaction, and self-blame, that healthcare professionals may feel after making a decision are included in the complicated and multidimensional concept of decision regret (Gonçalves, 2021; Brera et al., 2023).

The regret theory was developed by Loomes and Sugden in 1982, and they described regret as the "painful sensation of realizing that what currently exists is not as good as what could have been." The fundamental tenet of regret theory is that an individual's utility can be determined by evaluating the results of acts they chose with the effects of what they did not choose. In other words, the person compares the possible results of their decisions to the ones they would have made otherwise (Loomes & Sugden, 1982; Guan et al., 2024).

The most common types of regret that should be considered are the anticipated type and the experienced type. When agents face their choices in an attempt to decrease the regret that accompanies them this is called the anticipated type of regret. This suggests that people try to anticipate the regret they would feel after deciding, and they then behave in a way that, in their perspective, lessens that regret. The experienced type of regret is the ex-post feeling that results from understanding the impact of a choice in relation to the impacts of alternative possibilities (Liu, 2024).

Other types of decision regret are outcome regret, process regret, and chosen option regret. Outcome regret entails feeling regret for the results of a previous choice. It happens when people compare the results of a decision, they made with the better results they may have obtained if they had chosen otherwise. The three key factors contributing to outcome regret according to earlier research, are the sense of responsibility, the closeness of the counterfactual alternative outcome, and the distinction between action and inaction. (Brera et al., 2023).

Emotions like outcome regret can occur when there is a clear and accessible alternative, such as when one comes extremely close to attaining a better result. These feelings may also arise when improper or unreasonable choices or actions result in undesirable consequences (Liu et al., 2022).

Process regret refers to regretting the choices made throughout the decision-making process, such as failing to obtain sufficient information or consulting with others. Conversely, regretting the option selected from the available options is known as chosen option regret. Psychologists have made a crucial distinction between regret for the decision itself and regret for the decision-making process (Connolly & Zeelenberg, 2002; Inman & Zeelenberg, 2002). These unfavorable feelings can be brought on by several things, including lack of information or support, conflicting priorities or values, and ambiguity about the choice (Brera et al., 2023).

Regret is important since it can impact nurses' mental and physical well-being (Rutledge et al., 2024). There is a correlation between the level of regret and several physical and mental symptoms. Extreme regrets can lead to low job satisfaction, which in turn can impact the decision to change careers, as well as feelings of loss, low health-related quality of life, a high number of sick days, and low trust in a healthcare provider's ability to make clinical judgments (Saposnik et al., 2021).

Regret can also be a source of insomnia (Krizan et al., 2024). Nevertheless, regret can be linked to positive outcomes like enhanced learning (Shaw et al., 2020). Given these potential consequences, it has begun to gain attention as a measure for assessing the quality of medical judgments.

It is unclear how frequently regret is felt following health decisions, despite evidence indicating that it is among the most frequent emotions experienced in daily life (McCormack, et al., 2020).

Significance of the study:

Regarding patient care, it is significant to highlight negative emotions such as regret, the second most common negative emotional state among healthcare personnel (Matarazzo et al., 2021). Few research have looked into this topic, particularly when it comes to critical care nurses.

Studying regret intensity among nurses in Egypt's healthcare system is crucial due to the high-stress environment, ethical dilemmas, and impact on patient care. Nurses in Egypt often work in overcrowded hospitals with limited resources, making high-stakes decisions that can lead to intense regret, affecting both their mental well-being and professional performance. Additionally, persistent regret is linked to burnout, emotional exhaustion, and job dissatisfaction, which are significant concerns given the ongoing nursing shortages in Egypt.

Aim of the study:

This study aimed to assess regret intensity levels among critical care nurses.

Research Question:

What is the level of regret among critical care nurses?

Materials and Method

Materials

Research design: A descriptive research design was used to carry out this study.

Setting: This study was conducted at an Egyptian university hospital. It provides public nonpaid health services. It is the largest educational university hospital in Alexandria. It is the first university hospital started serious steps to fulfill requirements of the General Authority for Health Accreditation and Regulation (GAHAR) regarding patient safety. The study was conducted in all critical care units (N=23).

Subjects: Out of 415 staff nurses (the total population), 163 nurses were found to be the minimum sample size at a confidence level of 99% based on the G-power program. The participants were selected conveniently, based on the inclusion criteria of working in providing direct patient care, having experience in the working hospital for at least 6 months, being available at the time of data collection, and being willing to participate in the study. However, to attain the desired sample size, 280 nurses were included for possible attrition.

Tools:

One tool was used to collect data as follows:

Tool (I): ***Regret Intensity Scale (RIS-10):***

The scale was developed by Courvoisier et al. (2013) and validated by Richner et al. (2017), Smiderle et al. (2021), and Li et al. (2024). It was designed to measure regret intensity associated with providing healthcare decisions. The scale contains 10 items (e.g., At home, I have trouble falling asleep), rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale scores were computed by averaging the 10 items. A mean score ≤ 2.75 indicates low

regret intensity, a mean score more than 2.75 to less than 3.80 indicates moderate regret intensity, and a mean score ≥ 3.80 indicates high regret intensity. The reliability of the tool was α= 0.87.

In addition**,** personal, professional, and work-related characteristics sheet was developed and used by the researcher to collect data related to the nurses' age, sex, educational level, years of experience since graduation, years of experience in the current hospital, and working shifts.

Method

Approval to conduct the study was obtained from the Research Ethics Committee (REC), Faculty of Nursing, and Alexandria University. (permission no (13-12- 2023) IRB00013620 (9-19-2025)).

An official permission was obtained from the Dean of the Faculty of Nursing, Alexandria University to get an agreement to conduct the study.

Written approval from the hospital director was obtained to conduct the study after explaining the aim of the study and collecting the necessary data.

The study tool was translated into Arabic, back-to-back translation was done and tested for their face and content validity by five experts in the field of the study, and the necessary modifications were done CVI was 1.000. The Arabic version of the study tool was tested for its reliability (α= 0.726) by using appropriate statistical tests to measure the internal consistency of the items composing the tools.

Data collection was conducted by the researcher, through a self-administered questionnaire. It was hand-delivered to the study participants in their work settings in the morning and evening shifts after explaining the aim of the study. They were asked to return to the researcher in the study setting. Data collection took two months, from the beginning of August 2024 to the end of September 2024.

After completing the data collection, the appropriate statistical tests were used to assess levels of regret intensity among critical care nurses.

Ethical Considerations

Written informed consent from the study subjects was obtained after an explanation of the aim of the study. The subjects participated in the study on a voluntary base. Confidentiality of the data was maintained, and the anonymity of the study subjects was assured. The subject's right to withdraw at any time from the study was assured.

Statistical Analysis

Data collected throughout the study have been coded and entered into the computer using the IBM SPSS statistical package (V.27). Data validation has been done by dual data entry and cross-matching entered data to elucidate data entry typos, in addition to other validation and cleansing techniques like verifying variables logically.

Qualitative data were described using numbers and percentages. Quantitative data were described using range mean, and standard deviation. The significance of the obtained results was judged at the 5% level.

Results

Table (1) shows the personal, professional, and work-related characteristics of the studied nurses. More than half of nurses (55.3%) were females. Most of the nurses (82.6%) were between 20 and less than 30 years old, with a mean age of 27.36 years.

Regarding nurses' level of education, more than half of them (51.4%) held

associate nursing degrees, while 48.6% held bachelor's degrees in nursing. Moreover, nearly two-thirds of the nurses (60.5%) had less than five years of experience since graduation. Also, 34% of them had five to less than ten years of experience, and only 5.5% had more than 10 years of experience, with a mean of 4.29 years.

Regarding the years of experience in the current hospital, most of nurses (88.5%) had less than five years of experience. 10.3% had five to less than ten years of experience, and only 1.2% had more than 10 years of experience, with a mean of 2.44. Most of nurses (90.9%) had mixed shifts (morning, evening, night, and long shifts); 5.5% were working fixed morning shifts, and 3.6% were working fixed long shifts (morning and evening shifts).

Table (2) and **Figure (1)** show the distribution of the studied nurses according to their regret intensity levels and mean scores on the RIS-10. It was noted that 60.1% of nurses experienced a moderate regret intensity level, 27.7% experienced a low level of regret intensity, and 12.3% experienced a high level of regret intensity, with a mean of regret (2.95 ± 0.55).

Discussion

The current study found that nurses experienced moderate regret intensity levels on the RIS-10. This finding may suggest that nurses caring for critically ill patients can experience regret associated with their clinical decisions due to the possibility of negative consequences. This speculation is supported by Mahat et al. (2024) who claimed that nurses, who are more directly involved in patient care, are more likely to have emotional responses to adverse outcomes.

This finding aligns, to a considerable extent, with a study by Matarazzo et al. (2021), who observed that healthcare providers frequently experience regret, particularly in cases involving errors or missed opportunities in patient care, given the high stakes involved. Nurses, in particular, report higher emotional labor, which may contribute to greater regret intensity (Augusto Landa et al., 2010).

Schmidt et al. (2015) also found higher levels of regret among nurses compared to physicians. Research attributes this to the demanding nature of nursing roles, which often involve constant interaction with critically ill patients and high-stress environments, leading to prolonged regret experiences (Sattar et al., 2024).

Regarding the number of regret situations experienced by healthcare providers, Courvoisier et al. (2014) found that nurses experienced a higher number of regret situations than physicians.

On the contrary, Cheval et al. (2019) found that physicians experienced a higher number of regret situations than nurses. Similarly, Cheval et al. (2021) found that there was a significant difference between nurses and physicians regarding the mean number of regret situations experienced by them. They found that physicians experienced a higher number of regret situations than nurses.

The variation in the regret intensity and the number of regret situations experienced by nurses and physicians can be attributed to multiple factors. Firstly, the nature of their roles and level of responsibility significantly impacts regret experiences. Nurses have more direct interactions with patients, leading to greater emotional involvement and an increased likelihood of regretting patient-related outcomes (Sattar et al., 2024). In contrast, physicians encounter regret in different contexts, such as diagnostic errors or treatment decisions, but their higher level of autonomy may result in less frequent yet more intense regret (Mamede et al., 2007).-

Secondly, methodological differences across studies may explain the discrepancies. Variations in how regret is defined and measured, differences in sample populations, and diverse statistical approaches can all influence the findings. Furthermore, workplace conditions and organizational factors also play a role in shaping the frequency of regret experiences.

Overall, the differences in findings are more likely due to variations in healthcare roles, research methodologies, and workplace environments rather than actual inconsistencies. Future studies should aim to standardize measurement tools and take into account contextual factors such as workload, patient engagement, and coping mechanisms to gain a clearer understanding of these variations.

Limitations

Studying regret among nurses presents several limitations. First, self-reported measures of regret may be influenced by recall bias, as nurses might not accurately remember or may underreport past experiences due to emotional distress. Additionally, cultural and organizational differences in healthcare settings can impact how regret is perceived and managed, limiting the generalizability of findings across different populations. Another challenge is distinguishing between acute and chronic regret, as nurses may experience varying intensities of regret depending on the severity of the situation and available coping mechanisms. Moreover, the dynamic nature of healthcare environments especially critical care units, with high workloads and emotional demands, can make it difficult to isolate regret from other emotional responses such as stress and burnout. Finally, social desirability bias may lead nurses to downplay their regrets, particularly in environments where admitting mistakes is stigmatized, affecting the accuracy of data collection.

Conclusion:

In the current study, most nurses experienced a moderate regret intensity level. So, reducing regret in the healthcare sector is vital, as the increased levels of regret can negatively affect job satisfaction, mental health, and the quality of patient care. Regret often emerges when healthcare professionals feel they could have achieved better outcomes, especially in high-stakes environments where decisions are complex, and resources are limited.

Additionally, creating structured support systems, such as peer support groups and mental health resources, provides professionals with spaces to discuss difficult experiences and learn coping strategies. Organizational policies that encourage reflective practices such as post-case reviews where staff can discuss outcomes without fear of blame are also crucial. By fostering an environment that values learning from experience and prioritizes emotional well-being, Egypt's healthcare system can reduce the intensity of regret among its professionals, fostering a more resilient, effective, and compassionate workforce.

Study Implications

Studying regret among healthcare professionals, particularly nurses, has several practical implications. Understanding how regret influences decision-making can help develop targeted training programs that enhance critical thinking and resilience, ultimately improving patient care. Insights into regret-related coping strategies can inform interventions to reduce emotional distress, mitigate burnout, and enhance job satisfaction. Additionally, recognizing patterns of regret can aid in refining hospital policies to foster a supportive environment where nurses feel comfortable to discuss and learn from mistakes without fear of stigma.

This research can also contribute to

improving ethical decision-making frameworks, ensuring that past regrets lead to constructive changes in clinical practices rather than emotional burdens. Ultimately, applying these findings can enhance both nurse well-being and overall healthcare quality by promoting a culture of continuous learning and psychological safety.

Recommendations:

To reduce the negative impact of regret, several actions are recommended. Developing a supportive environment is essential, which includes creating a non-punitive culture where healthcare providers feel safe to express and discuss their regrets. Establishing peer support groups can also facilitate shared experiences and coping strategies. Additionally, implementing coping skills training is crucial, such as offering programs on adaptive coping mechanisms, including problem-focused and emotion-focused strategies. Providing resources like counseling services can further help address emotional distress linked to regret. Enhancing organizational support is another key approach to ensuring that healthcare providers have access to mental health resources and stress management programs. Furthermore, developing policies that encourage open communication about errors and learning from regrets without fear of reprisal can promote a healthier work environment and improve overall well-being.

Author contributions

Marawan Salah Zaki Hassan, demonstrator: He played a key role in data collection, analysis, and interpretation. Assisted in drafting and refining the dissertation, while also contributing to the methodology and statistical analysis.

Azza Hassan Mohamed Hussein, Emeritus Professor: She supervised the research and provided expert, fruitful guidance, motivation, support, and enthusiasm through the process of this study. Also, she contributed to developing and translating the study tools, verifying the statistical analysis, results interpretation, writing discussion section, and final review of the whole dissertation.

Marwa Abd El-Gawad Ahmed Mousa, Assistant Professor: She has devoted thoughtful guidance, prompt assistance, inspiring suggestions, and precious effort in the supervision of this study. Also, she contributed to the data analysis and interpretation, provided guidance on the literature review and discussion sections, and assisted in writing and revising the dissertation.

Table (1): Personal, professional, and work-related characteristics of the studied nurses

Personal, professional, and work-related characteristics	Category	Total sample (n=253)	
		No.	%
Sex	Female	140	55.3%
	Male	113	44.7%
Age (Years)	20-<30	209	82.6%
	30-<40	41	16.2%
	40+	3	1.2%
	Mean ± S.D.	**27.36 ± 3.24**	
Nurses' level of education	Associate degree of nursing	130	51.4%
	Bachelor's degree of nursing	123	48.6%
Years of experience since graduation (in years)	<5	153	60.5%
	5-<10	86	34.0%
	10+	14	5.5%
	Mean ± S.D.	**4.29 ± 2.97**	
Years of experience in current hospital (in years)	<5	224	88.5%
	5-<10	26	10.3%
	10+	3	1.2%
	Mean ± S.D.	**2.44 ± 2.18**	
Working shift	Fixed morning shifts	14	5.5%
	Fixed long shifts (morning and evening)	9	3.6%
	Mixed (morning, evening, long, and night shifts)	230	90.9%

SD: Standard deviation

Table (2): Distribution of the studied nurses according to their regret intensity levels and mean scores on the Regret Intensity Scale (RIS-10).

	Category	Total sample (n=253)	
		No.	%
Regret Intensity Levels on RIS-10	Low	70	27.7%
	Moderate	152	60.1%
	High	31	12.3%
Overall Regret Intensity Mean Score	**Mean ± S.D.**	**2.95 ± 0.55**	

Cutoff point: Score ≤ 2.75= Low. 2.75 > Score < 3.80= Moderate. Score ≥ 3.80= High.

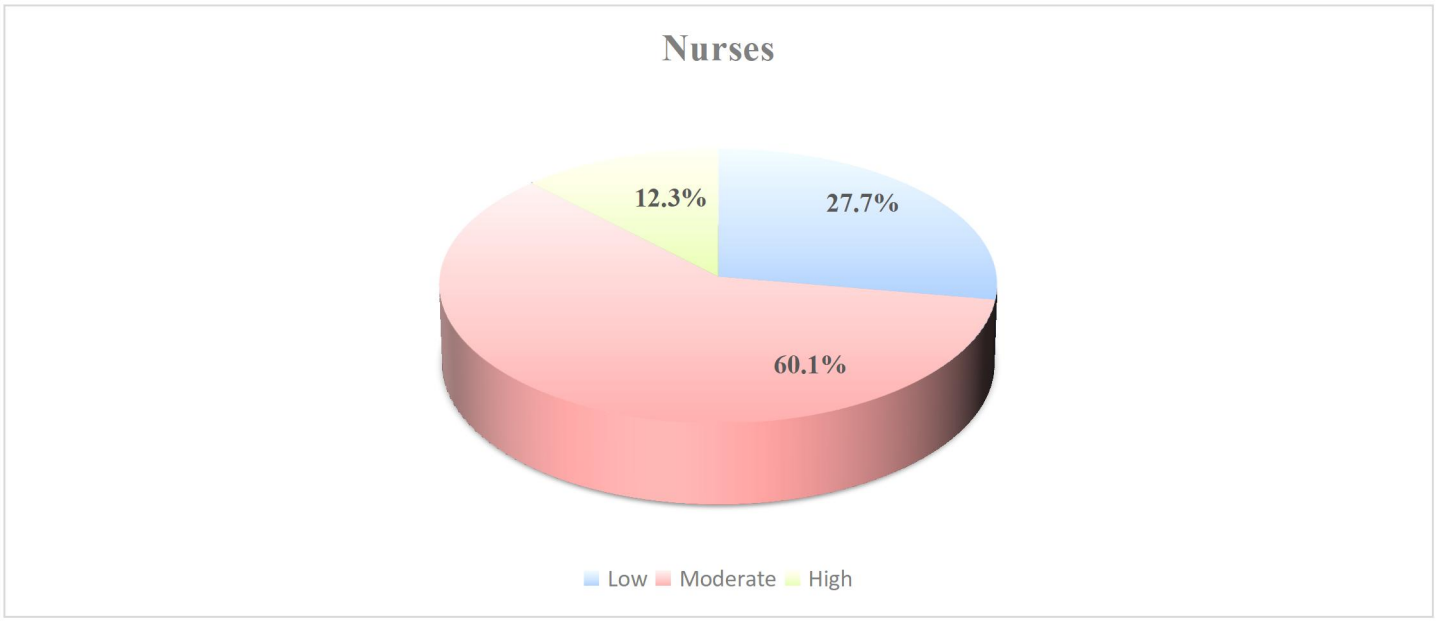

Figure (1): Distribution of nurses according to their regret intensity levels on the Regret Intensity Scale (RIS-10).

References

- Augusto Landa, J. M., Martos, M. P., & López-Zafra, E. (2010). Emotional Intelligence and Personality Traits as Predictors of Psychological Well-Being in Spanish Undergraduates. *Social Behavior and Personality: an international journal*, *38*(6),783-793. https://doi.org/10.2224/sbp.2010.38.6.783

- Brera, A. S., Arrigoni, C., Magon, A., Conte, G., Belloni, S., Bonavina, L.,…Pasek, M. (2023). Mapping the literature on decision regret in patients with non-communicable diseases (NCDs): a scoping review protocol. *BMJ Open*, *13*(7), e072703. https://doi.org/10.1136/bmjopen-2023-072703

- Cheval, B., Cullati, S., Mongin, D., Schmidt, R. E., Lauper, K., Pihl-Thingvad, J.,…Courvoisier, D. S. (2019). Associations of regrets and coping strategies with job satisfaction and turnover intention: international prospective cohort study of novice healthcare professionals. *Swiss Medical Weekly*, *149*(1718), w20074. https://doi.org/10.4414/smw.2019.20074

- Cheval, B., Mongin, D., Cullati, S., Uribe, A., Pihl-Thingvad, J., Chopard, P., & Courvoisier, D. S. (2021). Associations of emotional burden and coping strategies with sick leave among healthcare professionals: A longitudinal observational study. *International Journal of Nursing Studies*, *115*, 103869. https://doi.org/10.1016/j.ijnurstu.2021.103869

- Connolly, T., & Zeelenberg, M. (2002). Regret in Decision Making. *Current Directions in Psychological Science*, *11*(6), 212-216. https://doi.org/10.1111/1467-8721.00203

- Courvoisier, D. S., Cullati, S., Haller, C. S., Schmidt, R. E., Haller, G., Agoritsas, T., & Perneger, T. V. (2013). Validation of a 10-item Care-related Regret Intensity Scale (RIS-10) for Health Care Professionals. *Medical Care*, *51*(3), 285-291. https://doi.org/10.1097/MLR.0b013e318280f02c

- Courvoisier, D. S., Cullati, S., Ouchi, R., Schmidt, R. E., Haller, G., Chopard, P.,…Perneger, T. V. (2014). Validation of a 15-item Care-related Regret Coping Scale for Health-care Professionals (RCS-HCP). *Journal of Occupational Health*, *56*(6), 430-443. https://doi.org/10.1539/joh.14-0060-OA

- Gonçalves, V. (2021). Decisional Regret in Female Oncofertility Decision Making—An Integrative Narrative Review. *Cancers*, *13*(19), 4735. https://www.mdpi.com/2072-6694/13/19/4735

- Guan, Z., Yu, T., Dong, J., & Zhang, J. (2024). Impact of consumers' anticipated regret on brand owners' blockchain adoption in the presence of a secondhand market. *International Journal of Production Economics*, *271*, 109197. https://doi.org/https://doi.org/10.1016/j.ijpe.2024.109197

- Inman, J. J., & Zeelenberg, M. (2002). Regret in Repeat Purchase versus Switching Decisions: The Attenuating Role of Decision Justifiability. *Journal of Consumer Research*, *29*(1), 116-128. https://doi.org/10.1086/339925

- Krizan, Z., Boehm, N. A., & Strauel, C. B. (2024). How emotions impact sleep: A quantitative review of experiments. *Sleep Medicine Reviews*, *74*, 101890. https://doi.org/10.1016/j.smrv.2023.101890

- Li, J., Luo, Z., Chen, Y., Zhao, Q., Zhang, S., Zhou, W.,…Tang, J. (2024). Measuring care-related regret intensity: Reliability and validation of a 10-item scale among Chinese nursing interns. *Nurse Education in Practice*, *74*, 103845. https://doi.org/10.1016/j.nepr.2023.103845

- Liu, J., Hunter, S., Zhu, J., Lee, R. L.-T., & Chan, S. W.-C. (2022). Decision regret regarding treatments among women with early-stage breast cancer: a systematic review protocol. *BMJ Open*, *12*(3), e058425. https://doi.org/10.1136/bmjopen-2021-058425

- Liu, Z. (2024). The asymmetric impact of decision-making confidence on regret and relief. *Frontiers in Psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1365743

- Loomes, G., & Sugden, R. (1982). Regret Theory: An Alternative Theory of Rational Choice Under Uncertainty. *The Economic Journal*, *92*(368), 805-824. https://doi.org/10.2307/2232669

- Mahat, S., Rafferty, A. M., Vehviläinen-Julkunen, K., & Härkänen, M. (2024). Registered nurses' emotional responses to medication errors and perceived need for support: A qualitative descriptive analysis. *J Adv Nurs*. https://doi.org/10.1111/jan.16280

- Mamede, S., Schmidt, H. G., & Rikers, R. (2007). Diagnostic errors and reflective practice in medicine. *Journal of Evaluation in Clinical Practice*, *13*(1), 138-145. https://doi.org/10.1111/j.1365-2753.2006.00638.x

- Matarazzo, O., Abbamonte, L., Greco, C., Pizzini, B., & Nigro, G. (2021). Regret and Other Emotions Related to Decision-Making: Antecedents, Appraisals, and Phenomenological Aspects. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.783248

- McCormack, T., Feeney, A., & Beck, S. R. (2020). Regret and Decision-Making: A Developmental Perspective. *Current Directions in Psychological Science*, *29*(4), 346-350. https://doi.org/10.1177/0963721420917688

- Okimura, A., & Hayashi, N. (2023). Relationships between bereaved families' decision-making regret about end-of-life care place for patients with cancer and relevant factors. *Asia-Pacific Journal of Oncology Nursing*, *10*(1). https://doi.org/10.1016/j.apjon.2022.100167

- Richner, S. C., Cullati, S., Cheval, B., Schmidt, R. E., Chopard, P., Meier, C. A., & Courvoisier, D. S. (2017). Validation of the German version of two scales (RIS, RCS-HCP) for measuring regret associated with providing healthcare. *Health and Quality of Life Outcomes*, *15*(1), 56. https://doi.org/10.1186/s12955-017-0630-z

- Rutledge, J. A., Williams, J. D., & Barlow, M. A. (2024). The

relationship between life regrets and well-being: a systematic review. *Frontiers in Psychology*, *15,* 1515373 https://doi.org/10.3389/fpsyg.2024.1515373

- Saposnik, G., Bueno-Gil, G., Sempere, Á. P., Rodríguez-Antigüedad, A., del Río, B., Baz, M.,…Maurino, J. (2021). Regret and Therapeutic Decisions in Multiple Sclerosis Care: Literature Review and Research Protocol. *Frontiers in Neurology*, *12,* 675520. https://doi.org/10.3389/fneur.2021.675520

- Sattar, R., Lawton, R., Janes, G., Elshehaly, M., Heyhoe, J., Hague, I., & Grindey, C. (2024). A systematic review of workplace triggers of emotions in the healthcare environment, the emotions experienced, and the impact on patient safety. *BMC Health Services Research*, *24*(1), 603. https://doi.org/10.1186/s12913-024-11011-1

- Schmidt, R. E., Cullati, S., Mostofsky, E., Haller, G., Agoritsas, T., Mittleman, M. A.,…Courvoisier, D. S. (2015). Healthcare-related regret among nurses and physicians is associated with self-rated insomnia severity: a cross-sectional study. *PloS one*, *10*(10), e0139770. https://doi.org/10.1371/journal.pone.0139770

- Shaw, Y., Bradley, M., Zhang, C., Dominique, A., Michaud, K., McDonald, D., & Simon, T. A. (2020). Development of Resilience Among Rheumatoid Arthritis Patients: A Qualitative Study. *Arthritis Care & Research*, *72*(9), 1257-1265. https://doi.org/10.1002/acr.24024

- Smiderle, F. R. N., Ramos-Silva, V., Castro, S. M. d. J., Courvoisier, D. S., & Mattiello, R. (2021). Portuguese validation of the Regret Intensity Scale (RIS-10) for measuring the intensity of regret associated with the provision of attention in health. *Investigación y Educación en Enfermería*, *39*(3). https://doi.org/10.17533/udea.iee.v39n3e09