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Physical and psycologycal impact of Hair Removal after a craniotomy

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ABSTRACT

Background*: Hair Removal is the removal of hair in the scalp area to make it easier to mark the incision location and prevent hair contamination in the craniotomy surgical area.*
Objectives ; *This article aims to determine the physical and psychological impact of Hair Removal on patients undergoing craniotomy.*
Methods: *A systematic review was written based on the identification of scientific articles in three databases, Science Direct, PubMed NCBI, and Proquest using the terms Physical, Psychological, Hair Removal, Craniotomy. Neurosurgery The author selected and analyzed using PRISMA based on predetermined inclusion and exclusion criteria. The review obtained from several electronic databases revealed 662 research articles and a total of 11 articles for analysis.*
Results*: The physical impact of using non-standard hair razors causes wounds on the scalp, the striptease hair shaving model has a greater risk of infection during craniotomy operations. The psychological impact of regional hair removal has a negative impact on the patient's body image. The body image scale and anxiety about body shape experienced significant differences between pre and post craniotomy surgery.*
Conclusions*: Hair Removal is still needed to protect the surgical area from hair contamination intraoperatively and make it easier to mark the scalp for incisions during craniotomy surgery. However, there is also a belief that Hair Removal increases the risk of SSI by causing microscopic skin trauma. Regional Hair Removal models can have long-term impacts. This can further affect the patient's body image after the craniotomy procedure.*

KEYWORD: *craniotomy; hair removal;, hair shaving; neurosurgery; physical; psychological.*

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INTRODUCTION

In the procedure of preparation for craniotomy surgery. We perioperative are tasked with ensuring that the preparation for surgery goes smoothly. One of them is performing Hair Removal. The purpose of Hair Removal is to facilitate adequate exposure to the surgical site and skin marking before craniotomy surgery. In addition, suturing and dressing the wound can be complicated because there is still hair in the incision are (1). Traditional Hair Removal has been a routine part of preoperative preparation in patients undergoing craniotomy surgery.

However, there is also an opinion that Hair Removal is the opposite, namely it can increase the risk of SSI by causing microscopic skin trauma (2). Then the results of the next study also concluded that. Shaving using a razor is the most common patient experiencing post-craniotomy wound infection (3). Apart from these practical problems, hair has been associated with poor hygiene and has the potential to cause surgical wound infections (SSI).

Hair plays an important role in the psychological condition of post-operative patients, because hair reflects a person's body image, Discomfort in patients is also a problem for post-craniotomy surgery patients, changes in body shape in the head caused by pre-craniotomy shaving. In the study. Concluded that feelings that are directly related to decreased self-esteem are loss of physical attraction, insecurity and shame (4). Therefore, this study is intended to determine the physical and psychological impacts of Hair Removal on patients who will undergo craniotomy, so that it can be a literature for nurses and surgical teams in performing Hair Removal on patients who will undergo craniotomy.

MATERIAL AND METHODS

A systematic review was carried out comprehensively on selected articles that discussed the physical and psychological impact of hair removal on patients undergoing craniotomy. Articles sourced from Science Direct, PubMed NCIJBI, and EBSCO. Search using keywords with Boolean searches such as "Physical AND "psychological" AND "Hair Removal" AND "Neurosurgery" to find relevant articles according to the research objectives.

The search for scientific articles was limited to the inclusion criteria for articles published online: (i) Research during the last five years (2014-2024); (ii) Research study regarding the physical and psychological impact of Hair Removal procedures on craniotomy patients; (iii) Articles with full text in the form of scientific reviews and original research.

Data-based literature searches were systematically reviewed to obtain empirical evidence regarding the physical and psychological impact of Hair Removal procedures on craniotomy patients. The exclusion criteria are: (i) Articles that do not use English or Indonesian, and (ii) Articles on

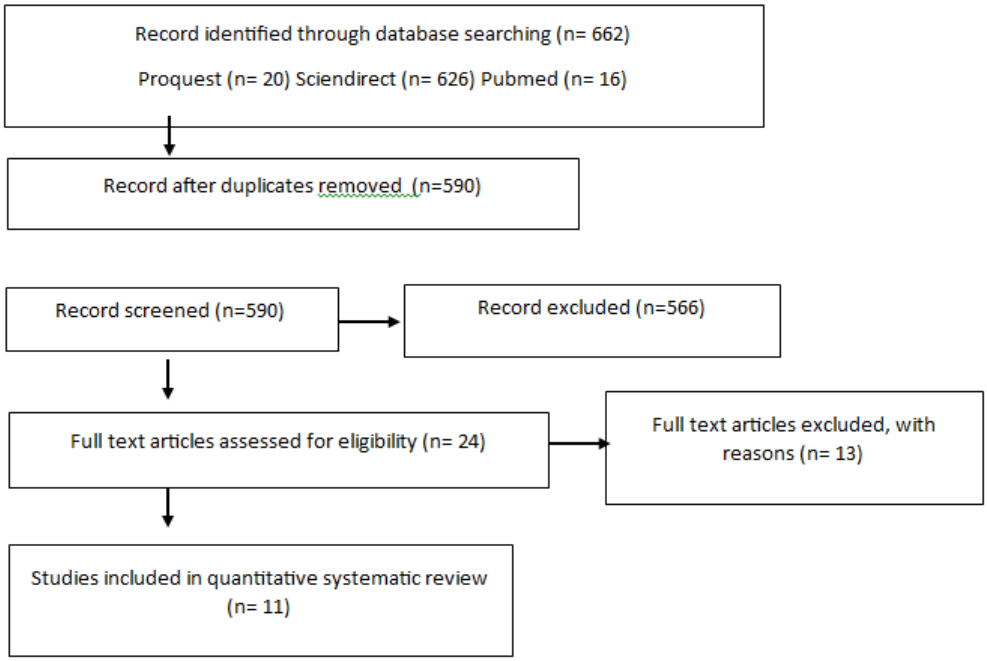

Figure 1. Article selection process based on the PRISMA model

the physical and psychological impact of hair removal but not on patients undergoing craniotomy. Studies obtained from several electronic databases produced 662 research articles.

After removal of duplicates, 590 articles were also reviewed based on the full text of the articles. Finally, 11 articles from database has been identified previously. The preferred reporting items for systematic reviews (PRISMA) method was applied, and below is the PRISMA flowchart of this study as shown in **Figure 1**.

RESULTS AND DISCUSSION

RESULTS

Article searches were carried out using several keywords. Then the number of search results using the keywords physical, physicological, Hair Removal, Neurosurgery was found to be 662 relevant articles from three databases, namely Science Direct (626), Proquest (20), and PubMed (16). We identify 24 articles for full-text selection to assess eligibility.

Then 11 articles were found that met the pre-determined inclusion criteria and were suitable for review in accordance with the Joanna Briggs Institute (JBI) guidelines. The Prisma flow diagram for literature identification is shown in **Figure 1**, while **Table 1** and **Figure 2** show a summary of the research results included in this article. **Table 1** shows a summary of selected research findings.

Table 1. Result of a review of selected article

Study	Shaver	Shaving model	Time shaving	Total sample	Types of research	Result
Veysel Barış (2022)	Cliper Razor Depilatory cream	Regional dan striptis	Hair removal on the day of surgery compared with one-day preoperatively	314 patients	Priospective cohort	Wound infections occurred in 6 patients who had their hair shaved using a clipper, 8 patients who had their hair shaved using a razor, and 4 patients who had their hair removed using hair removal cream. Shaving using a razor is the most common cause of craniotomy wound infections among patients
Wen-jie Liua (2022)	-	Striptis dan reginoal		4583 patients	Meta analisis	Maintaining hair without shaving before craniotomy surgery and washing hair early after surgery does not increase the rate of infection in craniotomy surgical wounds
Tanner et al., (2021)	Clliper Razor Depilatory cream		Hair removal on the day of surgery compared with one-day preoperatively	8919 participants	SCR	There may be little diference in risk of SSI when clippers or depilatory cream are used (low-certainty evidence). However, there are probably fewer SSIs when hair is not removed compared with shaving with a razor (moderate-certainty evidence). If hair has to be removed, moderate-certainty evidence suggests using clippers or depilatory results in fewer SSIs and other complications compared with shaving using a razor.

				There may be a small reduction in SSIs when hair is removed on the day of, rather than the day before, surgery.
Dr. Cliper Shailesh Maharjan MS (2019)		726 pasien kraniotomi		Hair removal is a routine procedure before craniotomy surgery, and carries the risk of causing surgical site infection
Nora Renz1 , (2018)		103 pasien	prospectif	95% of intracranial infections are related to foreign objects or implants installed intraoperatively
Insun YeomWon, (2017)		2641 pasien kraniotomi	Retrospectif comparativ study	Unshaved cranial surgery then using absorbable sutures for scalp closure as well as with early postoperative shampooing is safe and effective in the setting of cranial neurosurgery. This has a positive psychological effect. can help patients accept the craniotomy procedure and improve their self-image after surgery.
Gulsah Kose RN, PhD (2016)	Striptis dan regional	200 Pasien kraniotomi	RCT	There was no difference in surgical wound infections in the two groups of regioanal shaving and the striptease shaving group, it was found that the Social Appearance Anxiety Scale score increased in post-craniotomy patients who underwent the regional shaving model.

Kimon Bekelis, (2016)			94.744	retrospectif kohort	Long operative duration is associated with an increased incidence of SSI for craniotomy procedures
Simona et al.,(2016)	Cliper Razor Depilatory cream	Regional dan stiptis	450 Cases	Retrospectiv e Analysis of	Cranial neurosurgery without hair removal and “shampoo care” is an effective method to reduce infection rates. This results in a shorter hospital stay, better self-esteem and improved quality of life when the child goes back to family life and school.
R. Zhan & Y. Zhu Wen (2014)			1470 patients	Observation al retrospectif	The causes of infection during craniotomy procedures in China are CSF leaks, CSF drainage, and the duration of surgery is a risk factor that causes infection.
Yang, SH(2014)		Striptis and regional	58 Craniotom y patients	Crossection al	There was no difference in infection found in the surgical wounds of craniotomy patients who underwent hair removal and those who did not undergo hair removal. The body image scale decreases in post-craniotomy patients who undergo hair removal procedures

DISCUSSION

Shaving hair risks injuring scalp

Hair removal procedures carried out before the craniotomy procedure can pose a risk of surgical wound infection. Based on the results of previous research, the tools used also affect the risk of infection, such as clippers, razors and hair removal cream. It was found that the risk of infection resulting from hair removal was 29% when shaved

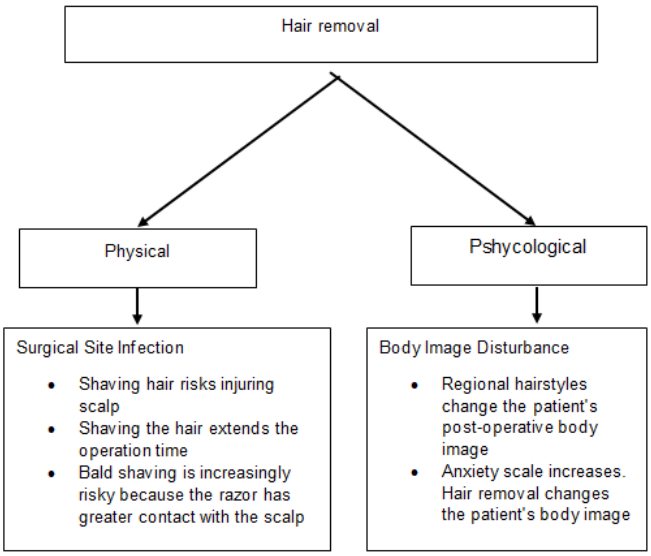

Figure 2. Summary of research result

using a clipper and 5% when cut using a razor at the surgical site. each experienced skin injury to some degree (5).

Furthermore, there were variations in results from research regarding the physical effects after craniotomy surgery associated with hair removal. Across the 3 studies, there was no significant difference in the rate of wound infection between groups of patients who underwent hair removal and those who did not. However, two studies suggest that hair removal may increase the risk of infection due to the potential for injury to the scalp, especially if the tools used are not sterile.

Shaving the hair extends the operation time

In addition, research shows that the longer duration of surgery due to hair removal can increase the risk of infection in the craniotomy surgical wound. According to research by Renz (2018), the majority of intracranial infections (95%) are related to foreign bodies and require surgical intervention and active treatment of biofilms. With standard treatment, the infection-free survival rate after 12 months is 87%, regardless of the location of infection or the type of microorganism causing the infection.

Bald shaving is increasingly risky because the razor has greater contact with the scalp

There is no evidence that shaving before surgery reduces infection. On the other hand, there is some evidence that shaving can actually increase infection in all types of craniotomy procedures (6). In this case, of course, the Striptease shaving model in patients will be more risky because All hair is removed so that the risk of microscopic injury caused by the razor will be greater on the patient's scalp. Shaving your hair before surgery can increase the risk of infection in

the surgical area, but this is difficult to avoid. Protocols based on scalp preparation practices and post-operative hygiene are essential to reduce the risk of post-operative infection (7). In contrast, cranial surgery without shaving the hair and using absorbable sutures to close the scalp, as well as washing the hair immediately after surgery, have been shown to be safe and effective in craniotomy.

The importance of considering the risk of infection in surgical procedures, especially related to hair removal, aims to ensure that patients can avoid wound infections. Based on a literature review, it is recommended to use standard shaving tools to reduce the risk of injury to the scalp during shaving, thereby reducing the possibility of infection caused by hair removal in patients undergoing craniotomy. Apart from that, the administration of prophylactic antibiotics should not be ignored, as well as attention to other factors that have a physical impact on patients undergoing craniotomy.

Regional hairstyles change the patient's post-operative body image

Hair has an important role in the patient's psychology after surgery, because hair is part of a person's body image. Discomfort after craniotomy surgery is related to changes in head shape due to hair removal before surgery (8). This study concluded that loss of physical interest, insecurity, and embarrassment are feelings that are often associated with decreased self-esteem after surgery. Hair removal protocols can have a positive psychological impact by helping patients accept neurosurgical procedures and improving their self-image after surgery (9).

Anxiety scale increases. Hair removal changes the patient's body image

According to research by Kose (10), the Social Appearance Anxiety Scale score decreased in patients who shaved their hair completely (striptease), while it increased in patients who only shaved regionally. The choice of hair shaving model, either by shaving all the hair (striptease) or only in certain regional areas, also influences the patient's perception of body image. The study also concluded that changes in body image scal before and after craniotomy showed significant differences between the two groups shaved with striptease and regional models (11). The act of shaving hair that affects the shape of the body of the head has been proven to be the main cause of changes in body image in patients.

Research that supports body image disturbances in craniotomy patients indicates that shaving hair before surgery does not affect the success of craniotomy surgery. However, this procedure prolongs the patient's duration before returning to daily activities and can disrupt body image, although it does not increase the risk of additional infections (12). Another recommendation is to perform cranial surgery without shaving the hair and using

absorbable sutures to close the scalp, as well as washing the hair immediately after surgery, which is safer and more effective in the management of cranial neurosurgery. This approach also has a positive psychological impact by helping patients accept neurosurgical procedures and improving post-operative self-image (13).

CONCLUSION AND RECOMMENDATION

Hair Removal is still necessary to facilitate adequate exposure of the site and marking of the skin prior to surgery. In addition, suturing and dressing wounds can be complicated because there is still hair in the incision area. Apart from these practical issues, hair has been associated with poor hygiene and the potential for surgical wound infections (SSI). However, there is also a belief that Hair Removal inversely increases the risk of SSI by causing microscopic skin trauma. Regional Hair Removal models can have long-term impacts, namely a different physical appearance by losing half of the hair. This can further affect the patient's body image after the craniotomy procedure.

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