

Exploring Factors Influencing Non-Compliance in Melanoma Patients' Postoperative Follow-Up

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Abstract

Introduction: Effective postoperative follow-up in melanoma patients is integral to comprehensive cancer care; however, patient non-compliance with follow-up appointments poses a considerable challenge. This multifaceted issue involves psychological, socio-economic, and healthcare system-related elements. Existing studies emphasize the importance of understanding patient perspectives, such as fear of recurrence and logistical barriers, to design interventions enhancing adherence to post-surgical monitoring. A current research gap lies in the absence of standardized frameworks and comprehensive investigations, necessitating an exploration to inform tailored interventions and improve adherence to follow-up protocols in melanoma patients. **Methods:** To address the research gap, a literature analysis was conducted utilizing a systematic approach. Relevant databases were systematically searched for studies focusing on postoperative follow-up in melanoma patients. The search encompassed keywords such as “melanoma”, “postoperative follow-up”, and “patient compliance”. Inclusion criteria comprised studies investigating psychological, socio-economic, and healthcare system-related factors contributing to patient non-compliance. **Results:** The literature analysis revealed a wealth of studies highlighting the multifactorial nature of patient non-compliance with postoperative follow-up in melanoma. Psychological factors, including fear of recurrence, emerged as a prominent deterrent. Socio-economic elements, such as lack of awareness and barriers in access to specialized care, were identified as significant contributors. Healthcare system-related factors, such as insufficient postoperative support, fragmented care coordination, and inadequate patient education, also played critical roles in influencing patient adherence to follow-up protocols. **Conclusion:** In conclusion, the analysis emphasizes the imperative of a comprehensive research agenda to expand

upon the diverse challenges hindering melanoma patients' adherence to post-operative follow-up protocols. The identified factors, including fear of recurrence and logistical barriers, necessitate tailored interventions to enhance adherence. This research agenda aims to inform healthcare practices and policies, ultimately improving the postoperative care continuum for melanoma patients.

Keywords

Melanoma, Postoperative Follow-Up, Patient Compliance, Psychological Factors, Socio-Economic Factors, Healthcare System-Related Factors, Fear of Recurrence, Non-Compliance, Patient Adherence, Post-Surgical Monitoring

1. Introduction

Effective postoperative follow-up is critical for the management of melanoma patients. Regular follow-up appointments allow healthcare providers to monitor patients for signs of melanoma recurrence, manage ongoing treatment side effects, and provide psychological support. However, patient non-compliance with follow-up appointments presents a significant barrier to optimal melanoma care. This is evidenced by the positive correlation noted between Breslow thickness and duration of follow-up and the increased frequency of additional primary melanoma skin cancers with longer follow-up appointments among patients [1]. This issue is particularly concerning given the aggressive nature of melanoma and the potential for rapid disease progression if not promptly detected and managed by health care professionals. Non-compliance with follow-up appointments is influenced by a complex interplay of psychological, socio-economic, and healthcare system-related factors. The psychological factor of non-compliance is substantial. For example, fear of recurrence of melanoma can deter patients from attending follow-up appointments. Socio-economic barriers such as lack of transportation, financial constraints, and work commitments can hinder patients' ability to adhere to recommended follow-up schedules. Healthcare system-related factors, including inadequate patient education, insufficient follow-up reminders, and limited access to specialized care, further exacerbate the issue of non-compliance.

This literature review aims to explore these factors by examining existing research to identify the key barriers to follow-up adherence in melanoma patients. By understanding the psychological, socio-economic, and healthcare system-related obstacles that contribute to non-compliance to follow-up, interventions can be better designed and implemented to address these challenges. Furthermore, the review will discuss potential strategies to improve adherence, such as patient education programs, psychological support services, and system-level changes to make follow-up care more accessible and convenient for patients. Through a comprehensive exploration of these issues, this review seeks to contribute to the development of more effective follow-up protocols and interventions, ultimately en-

hancing the quality of care for melanoma patients.

2. Psychological Factors

Fear of cancer recurrence (FCR) is a significant concern for melanoma patients post-operatively, impacting their mental health, quality of life, and compliance with follow-up care. Research indicates that patients treated for melanoma have an increased risk of developing further cancer, with as many as half of all patients experiencing a recurrence, necessitating routine skin checks and continuous self-monitoring for signs of recurrence [2]. Recurrence potential and the need to continuously self monitor may lead to excessive worrying and can potentially trigger depression or anxiety disorders [3]. A study at the Melanoma Institute Australia found that a substantial proportion of patients treated for localized melanoma experience significant FCR, with many scoring above thresholds indicative of clinical fear, despite having a good prognosis [4]. These findings underscore the need for effective psychological interventions and continuous monitoring to manage FCR and improve post-operative compliance among melanoma patients. A randomized controlled trial demonstrated that a brief, patient-centered psychological intervention, consisting of a psychoeducational resource and tailored telephone sessions, effectively reduced FCR in melanoma patients at high risk of developing another primary melanoma; this intervention showed sustained benefits at 12 months post-intervention, with significant reductions in FCR severity and triggers compared to usual care [5]. This study highlights the importance of integrating such interventions into routine care, with the aim of alleviating fear of cancer recurrence and promoting psychological well-being for patients who need to self-monitor and regularly visit their providers for routine checks. Implementing comprehensive psychoeducational resources and ensuring empathetic practitioner contact can significantly contribute to the success of these interventions [5]. Addressing FCR through targeted psychological support and regular monitoring of symptoms and functional limitations is essential for enhancing the well-being and compliance in follow-up appointments of melanoma survivors.

3. Socio-Economic Factors

3.1. Limited Patient Education

Limited patient knowledge regarding the importance of melanoma follow-up is a significant issue that impacts patient outcomes and the effectiveness of treatment. Many melanoma patients have limited knowledge about their disease, including critical aspects such as melanoma characteristics and the importance of self-inspection, which are essential for early detection of melanoma recurrences or second primary melanomas [6]. Non-metastasized melanoma differs from other types of cancers, such as colon or blood cancers, in that it can be treated by wide local excision (WLE) in one or more office visits. The general population seems to be more educated about the importance of proactive monitoring of cancers, including following screening recommendations set forth by the United States

Preventive Services Task Force (USPSTF) for cancers which often necessitate more aggressive treatments, such chemotherapy and radiation. While some skin cancers may also require these more aggressive treatments in advanced cases, the majority of patients can leave their doctor's office feeling "cancer-free" once the WLE has been completed. While the risk of recurrence is low, managing the FCR must not be the primary concern as minimizing the need for proactive monitoring can also lead to harmful outcomes for the patient. Lack of patient education and understanding can result in a casual attitude toward follow-up appointments, leading to cancellations and missed appointments for skin check visits. Patients may also neglect to monitor their own skin for changes and fail to seek medical attention should a suspicious lesion appear. Given the recurrence rate of melanoma, which ranges between 2% - 5% within five to twenty years after the initial diagnosis, and its potential aggressiveness, this mindset can be very dangerous and even deadly for patients [1].

Older patients are less likely to be aware of the melanoma risks associated with sun exposure and are less proactive in using preventive measures like sunscreen or seeking medical evaluations for skin changes [7]. A majority of the older population also did not utilize sun protective measurements during their youth, and are now experiencing the sequelae of repeated sun exposure. This demographic also tends to rely on traditional media like television for information, indicating that awareness campaigns should be tailored accordingly. Effective follow-up strategies for this population, which tends to rely on traditional media such as television for information, should include comprehensive patient education delivered through multiple channels, including oral, written, and digital formats, to enhance understanding and compliance [6]. Oral communication includes repeated patient education of desired follow-up time period while the patient is in the office, written instructions of when to follow-up, and digital formats including text reminders. While non-profit organizations and melanoma awareness groups often employ these strategies to educate patients and encourage follow-up screening appointments, the importance of traditional doctor-patient conversations and education cannot be understated. These direct physician-patient interactions are crucial for effectively overcoming non-compliance and adherence barriers and ensuring patients receive the necessary information and care.

3.2. Financial Constraints

Financial constraints play a significant role in contributing to non-compliance with follow-up appointments among melanoma patients. The costs associated with medical visits, transportation, and potential lost wages from time off work can be burdensome and can significantly impact patients' willingness and ability to adhere to follow-up schedules. For patients without adequate health insurance or those facing high insurance premiums, the economic strain can lead to prioritizing immediate financial stability over long-term health. A quantitative study assessing barriers to access dermatology care revealed that the three most com-

mon barriers included: 1) patients being continually uninsured (36.40%), 2) residing in a medically underserved county (22.70%), and 3) being under the federal poverty level (33.30%) [8]. Additionally, financial constraints can exacerbate existing socio-economic disparities in healthcare access. Patients, especially from lower-income backgrounds, often face challenges in affording and accessing transportation to and from medical appointments [9]. These difficulties are compounded by the additional need for childcare for parents when attending follow-up appointments, which further hinders their ability to comply with recommended follow-up regimens. The financial stress associated with medical care, including the cost of insurance, premiums, and prescription costs, etc. can also affect patients' mental health, leading to increased anxiety and depression, which can further impact motivation to attend follow-up appointments. Addressing these financial barriers is crucial for improving follow-up adherence in melanoma patients. Strategies such as financial assistance programs, sliding scale fees, and policies aimed at reducing out-of-pocket costs can help mitigate these economic challenges, ensuring that all patients, regardless of financial status, have the opportunity to receive consistent and comprehensive postoperative and continuity of care.

3.3. Access to Specialized Care

Limited access to specialized melanoma care can significantly hinder patient compliance with follow-up appointments, particularly for those from lower socio-economic backgrounds and patients living in remote or rural areas. Limited access to specialized melanoma care commonly leads to melanoma excisions and follow-up appointments being performed by general surgeons and general practitioners rather than dermatologists. Studies have shown that overall survival, disease-free survival, and recurrence-free intervals are significantly improved for patients treated and followed up by dermatologists when compared to those managed by general or plastic surgeons, and primary care providers [10] [11]. Khushalani *et al.*, noted that patients living in rural and remote areas are less likely to undergo sentinel lymph node biopsy, a procedure which is crucial for accurate staging in advanced melanomas to determine the need for adjuvant therapy in melanoma care [12]. There is currently a shortage of dermatologists, with 3.4 dermatologists per 100,000 people [8]. These studies highlight the importance of specialized dermatologic expertise in managing melanoma to achieve optimal patient outcomes and prevent melanoma recurrence.

In medical deserts, where there is insufficient medical care to meet the needs of the population, the geographical distance and financial burden required to access specialists significantly hinder patients from receiving appropriate care and attending follow-up appointments. A study by Atkins *et al.* found that patients with lower incomes ($\leq \$50,000$ annual household salary) were less likely to access specialized care [13]. Another study by Baranowski *et al.* highlights that patients with lower educational attainment, who often reside in underserved medical areas ge-

ographically far from specialized care, experience longer wait times from diagnosis to definitive surgical treatment [11]. As a result of these geographical burdens and a shortage of dermatology physicians, routine follow-up appointments after melanoma treatments are often difficult for this subset of patients to maintain due to a limited access to specialty care. This points to the critical need to improve patient access to enhance follow-up compliance among melanoma patients in rural and remote geographic areas. Some rural health systems are addressing this challenge by implementing mobile and traveling dermatology clinics, which visit patients a few times each month. However, limited appointment availability with these mobile clinics still restricts the number of patients who can be seen. Innovative care approaches, such as teledermatology, offer potential solutions by providing access to specialists for prompt postoperative follow-up care without imposing transportation costs or time constraints on patients. While teledermatology is effective in triaging patients to recommend earlier follow-up in-office appointments and managing certain dermatologic conditions, it may not be as effective in detecting melanoma [8]. However, in remote populations where in-office appointments may not be viable, teledermatology is an option to diagnose and treat melanoma [8]. Teledermatology has its benefits in providing healthcare in certain situations, but by the nature of it there are limitations with its remote platform.

4. Healthcare System-Related Factors

4.1. System Efficiency

The efficiency of the healthcare system plays a crucial role in patient adherence to follow-up care. Patients with multiple comorbidities may face longer wait times, potentially due to the need for additional anesthesia workup, visits to other care specialists for medication management, and/or complex surgical approaches. Delays in scheduling appointments and long wait times for an available appointment slot can discourage patients from maintaining their follow-up schedules. An inefficient system with issues such as those stated above may create additional stress and inconvenience for patients, which can lead to canceled, missed or delayed appointments as well. Enhancing the efficiency of healthcare services through better resource management and process optimization is essential for improving patient compliance. As provider sensitivity for diagnosing cutaneous melanoma is imperfect, this unnecessary delay in care due to systematic issues results in melanomas being diagnosed at more advanced stages, which creates a more complicated post-operative follow up experience and the potential need for more invasive treatment modalities [13].

The type of clinic a patient visits may also influence the time that the patient is made aware of their diagnosis and, therefore, the time that the patient is scheduled for WLE of the skin carcinoma. The time interval from primary excision to the registration of the histopathological assessment in medical records was significantly longer in primary healthcare centers (PHCs) when compared to hospital-

based and dermatological clinics in Sweden [14]. This delay further contributes to delayed diagnosis and treatment, illustrating a critical issue for future improvement. Up to date technologies that are promptly and efficiently used enable better coordination and communication among healthcare providers, facilitate timely appointment scheduling, and provide patients with easy access to their health information. By reducing administrative burdens and improving the flow of information, an efficient healthcare system can significantly enhance the quality of post-operative care for melanoma patients.

4.2. Standardization of Follow-Up Protocols

The lack of standardized follow-up protocols is another barrier to effective post-operative care for melanoma patients. Körner *et al.* reports that despite clinical guidelines recommending monthly skin self-exams (SSE) for melanoma patients, the majority do not practice SSE regularly or thoroughly [15]. This suggests a barrier related to the standardization and implementation of follow-up protocols. In the discussion by Khushalani *et al.*, family physicians and surgeons in rural areas often lack the expertise to perform procedural work related to melanoma care, such as sentinel lymph node biopsies, which is currently the standard of care for staging patients with primary melanomas [12]. If patients do not consent to sentinel lymph node biopsies for the staging of advanced melanoma, the subsequent standard of care involves conducting ultrasounds every six months to monitor for potential spread, metastasis, or recurrence [16]. However, scheduling and adhering to these regular ultrasound appointments can also present significant challenges, including logistical difficulties, financial constraints, and the emotional burden of frequent medical evaluations. A study by Hajdarevic, *et al.* noted that there were no specific time limits for referrals or excision of suspected melanomas in the Swedish guidelines, unlike some other European guidelines [14]. The preferred time for WLE of suspected or biopsy proven melanomas is as soon as possible, however as mentioned above there are limitations and constraints that may prevent patients from obtaining treatment in a timely manner, which may contribute to delays in diagnosis and treatment for some patients. Trotter *et al.* further emphasizes the lack of a uniform approach to melanoma follow-up care, with different dermatological and oncological organizations developing their own strategies that vary by specialty and methods of screening for recurrence [11]. This includes guidelines produced by organizations such as the National Cancer Center Network (NCCN), European Society for Medical Oncology (ESMO), American Academy of Dermatology (AAD), Britain Association of Dermatologists (BAD), among others [11]. The guideline which has the best survival outcome for patients with melanoma has not yet been identified [11]. This variability may create confusion and inconsistency in follow-up care in deciding which specific guideline to follow, which may be based on clinical practice or geographical location. Studies to evaluate patient survival and outcomes could further delineate if there is a superior guideline to follow to further standardize follow-up protocols and to im-

prove adherence and outcomes for melanoma patients.

5. Current Research

Studies have been done to address the lack of specialized dermatologic care, the findings of which can especially be used to further access to care in rural and remote areas. A study by Bouton *et al.*, evaluated general practitioners who emailed dermatologists photographs of lesions they thought to be suspicious for melanoma in a randomized control study to evaluate if this would reduce the time to obtain a dermatology appointment and reduce the amount of non-compliant patients to follow-up with dermatologists [17]. However, this innovative study did not find a significant difference between patients who had suspicious lesions emailed to dermatologists for melanoma which ultimately required resection and those who did not [17]. Non-compliance with follow-up among melanoma patients is an issue that requires attention, and further research studies, with increased patients and geographical location to be able to broadly generalize the results are indicated.

6. Future Research Directions

Future research should focus on several key areas to address the issue of non-compliance in postoperative follow-up for melanoma patients. Firstly, studies should investigate the impact of standardized follow-up protocols on patient adherence and outcomes, including patient and survival outcomes based on the guidelines that are followed. Research should also explore the effectiveness of various psychological support interventions, such as cognitive-behavioral therapy and psychoeducational programs, in reducing fear of recurrence and improving compliance. Additionally, there is a need to examine the role of socio-economic factors in greater detail, including the impact of financial support, incentives, and assistance programs on their role in patient adherence. Research should also evaluate the effectiveness of telemedicine and other technological innovations in improving access to follow-up care, particularly for patients in rural or underserved areas. Lastly, interdisciplinary approaches that combine insights from psychology, sociology, and healthcare management should be encouraged to develop comprehensive and tailored interventions aimed at improving follow-up adherence. Such future research can guide the development of targeted strategies to overcome the multifaceted barriers to compliance, leading to improved postoperative care for melanoma patients.

7. Conclusion

Effective postoperative follow-up in melanoma patients is crucial for early detection of recurrence and management of treatment side effects. However, patient non-compliance with follow-up appointments remains a significant challenge, influenced by a myriad of factors including psychological, socio-economic, and healthcare system-related factors. Addressing these barriers requires a compre-

hensive research agenda that explores tailored interventions, the integration of new and existing technologies, and the development of standardized follow-up protocols. Advancing patient education and alleviating financial constraints are actions that will directly influence how patients are able to interact with the health care system to obtain follow-up care. Research on these two aspects of health care is difficult as they are multifaceted, but necessary parts of healthcare. Increasing access to dermatologists and specialized care through avenues such as teledermatology may also improve follow-up among patients. Research should focus on determining specifically how teledermatology impacts melanoma follow up in rural and remote areas. To effectively improve follow-up adherence among patients with melanoma, it is necessary to address these barriers. By understanding and addressing the diverse challenges hindering follow-up adherence, healthcare practices and policies can be improved to enhance the postoperative care continuum and outcomes for melanoma patients.

Conflicts of Interest

There is no conflict of interest to disclose.

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