



Original Article

The Role of Nurse Practitioners (NPs) in Enhancing Quality and Minimizing Costs: A Literature Review

Dr. Amer Mohammed Al-Taie

A.M. PhD, Adult Nursing,
Alsafwa University, College of
nursing, Iraq.

Abstract

Modern healthcare is premised on the dependency of NPs... A case study of the services provided by NPs and MDs. The outcomes of patient care in nurse practitioner leader models. Satisfaction of the patients with services of their NP. Nurse practitioners effectiveness in health care and economic benefits of care. Reduced the re-hospitalization and patient visits to the ER as a result of the intervention of the NPs. Contribution of NPs in preventive care and basic care. The services of nurse practitioners can be used to enhance access and equity. NP input to chronic diseases. Nurse practitioners rule, regulations and national practice guideline. Increasing the efficiency of the system and resources with the help of NP roles.

Keywords: Education, competency, and training outcomes.

1. Introduction

The given papers will assist in examining the effects of nurse practitioners (NPs) on the modern healthcare systems in the aspects of access, cost-effectiveness, and care quality. The articles are provided on a chronological basis. According to the Interpersonal Nursing Theory provided by Peplau in identifying the location of the nurse-patient relationship as a fundamental element of health promotion, Bandy (2005) discusses the effect of NP practices on patient outcomes. The results of this study are a relief to the outdated idea that NP-led care is the most successful in terms of patient outcomes regardless of the differences in the learning requirements. It also subsequently follows up on more than 1,300

patients between 1995 and 1997 and finds that the NPs have been able to provide the services of the physician under the same circumstances. As suggested by Bandy (2005), the same results can be observed due to the assistance of relational dynamics and scheduled follow-up, and the current study is the high performance rate of NPs and physicians in the future. Yeong Woo, Lee, and Tam (2017) are systematic regarding the role of a nurse practitioner in intensive care unit and emergency room. They found that NP services can decrease the waiting time of a patient and produce the same result as the midgrade doctors, however, there is also some vice versa information about how much money the NPs spend compared to how much money the resident doctors spend. The review brings out a research gap in the literature



Corresponding Author: Dr. Amer Mohammed Al-Taie, The Role of Nurse Practitioners (NPs) in Enhancing Quality and Minimizing Costs: A Literature Review



©Copyright 2025 The Current Medical Research and Opinion. Licenced by Creative Commons Attribution-Non Commercial-NoDerivatives (CC BY-NC-ND) 4.0 International License. (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

Received: 24.08.2025 | Revised: 23.10.2025 | Accepted: 07.11.2025 | Published: 14.11.2025

as far as the timeliness of the findings is concerned. According to it the findings prior to 2013 are also not up to date and that a new synthesis is required to either determine whether the nurse practitioner care influences the outcomes in the emergency and critical care settings favorably with regard to the time taken in treatment, mortality, patient satisfaction, cost. Fong Yeong Woo et al. (2017) consider that NP-led care may increase the access, but to calculate the cost-effectiveness of NP-led care in high-acuity facilities is not easy. Johnson (2018) breaks down the evidence-based clinical care model of patient perception and outcome of a surgical NP and discusses it in depth, relying on evidence presented by different countries. After a review of the literature, low costs and patient satisfaction regarding the NP care, as well as, short wait time, are also part of the positive impressions. The higher quality of care and reduced costs are connected with the involvement of NPs in various environments (Canada, US, New Zealand, Ireland), and this proves that patient-centered models are complemented with NP-led pathways. The article focuses on a scientific method of assessing the NP care experiences and describes ethical implications and validated measures of the satisfaction (D Johnson, 2018).

Chavez, Dwyer, and Ramelet (2018) also extend the scope of the scoping to geriatric care with an international scoping review. They discover that, regarding the preventative and health-promotional orientation of nursing, the NP participation is more likely to increase the status of functions, symptom screening and medication review. Though the authors praise the Optum CarePlus model, they also mention that it has several flaws such as the excessively focused nature towards the elderly population and regional variations in the duties and titles of the nurse practitioners that make it difficult to attribute any outcomes to NP practice. According to Chavez et al. (2018), NPs can ease the burden of physicians in geriatrics through skills of access, self-management and cost reduction that always come first. Kilpatrick et al. (2023) have a global perspective in that they include studies on NP practice on a systematic

reviews protocol that incorporates clinical, provider, health system, educational, and policy aspects of NP practice research. The NPs by definition are full service providers, who organize tests, prescriptions and preventative programs. Some of the quality, patient satisfaction, cost, and outcome-related objectives that will take precedence in its approach are fewer hospital readmissions and emergency room visits, increased access, and health equity. The next more developed stage of synthesis is the incorporation of NP roles into larger changes in health systems, which is manifested in the emphasis on policy/scope of practice and interdisciplinary collaboration as qualifiers of NP influence (Kilpatrick et al., 2023).

In general, the articles are written in a sequence of increasing comprehension of the role of the NPs in various settings, beginning with the basic evidence that their quality is not worse than the one of the physician-based care and then more complex judgments of the costs and access enhancement dynamics in the emergency, surgical, and geriatric care. Lastly, the articles are aimed at cross-national syntheses that consider policy, education, and system level outcomes on an extensive level. All of these sources agree with the fact that the cost must be considered with quality and safety and that context, role clarity, cooperation, and regulatory scope intervene the effectiveness of NPs.

Researching the Factors how the practice of nurse practitioners is the reason of positive patient outcomes.

Following the correlation between the nurse practitioner (NP) practice patterns and the desired patient outcomes, this article establishes the importance of the nurse-patient interaction as the strategy in fostering health as the continuation of the Interpersonal Nursing Theory suggested by Peplau. In this article, the authors give the example of a study conducted by JAMA which attempted to support the argument that NP can produce the same or better results than the physicians under the same practice conditions due to the comparison of patient outcomes in the same

settings with the NP and the physicians with a large sample (combinations of over 1,300 patients followed over six months).

Evaluation - Evaluation theory-based.

The application of the Interpersonal Nursing Theory developed by Peplau has offered a methodological approach of relating the act of relationships to its consequences. It is consistent with the literature of effective communication, continuity of care, and patient engagement that emphasizes on the therapeutic nurse-patient relationship. To make the suggested mechanism more operational and testable, the article should have operationalized such a theory by offering specific measurable interfaces (e.g., the quality of the communication, the scores on patient activation, or the relationship continuity indexes in the paper).

- Evidence basis and comparability: The above-mentioned study that was conducted by the JAMA and involved a comparison between the NPs and the physicians in similar conditions provides more support to one of the practical claims in which, in the unregulated practice settings, NPs are also capable of achieving similar patient outcomes as their physician colleagues. However, it does not describe the design of the study that will entail such elements as randomization, the adjustment of the confounders (case mix, comorbidities, socioeconomic characteristics), or the type of outcome measures (diagnostic endpoints, process measures, patient-reported outcomes), which are only in the overview of the study. This makes it harder to give answers to the question of the internal validity of the results and how they can be applied to a larger population and a situation.

- NP education and scope: The primary supposition is that the educational needs of nurses are less than the physicians, which is used to put outcomes into perspective. The reviewers should clarify the connection between the breadth and scope of practice and continuous competence standards and the result they have found. The extent to which the practice patterns imply such aspects as diagnostic testing, care coordination activities, and independent prescribing, it is

challenging to discover what aspects have closer connections to good outcomes.

- Specification of the procedures: The period of follow-up (six months) is specified, and so is an allegedly equivalent comparison of settings. However, the summary lacks the description of the methods used including blinding, statistical analyses, outcome adjudication, and the selection criteria. This makes it difficult to evaluate viable biases, confidence interval and effect sizes (including selection bias, performance bias and Hawthorne effects).

- Formulation of broader themes: The article, in emphasizing the importance of relational practice as an important element of good care, contributes to a broader debate on the role of nurse practitioners as a determinant of quality and cost-effectiveness. The theoretical approach is helpful, but it must be complemented by clear comparisons with other quality factors (care coordination, access, continuity) and connect them with the measurable patient outcomes, which would be facilitated by the analysis of other studies rather than just the one by JAMA.

- Weaknesses and limitations: the article does not provide enough information about the ways in which the educational difference between NPs and physicians is affecting the change in practice or outcome among different populations, yet the gap is acknowledged. In addition to the patient outcomes, other gaps that should be discussed in the entire literature on the topic include long-term, economic, and system-level outcomes of NP-led care.

- Implications to practice: As the interaction between the nurse and the patient is crucial, one can make a conclusion that the competence of NP practice presupposes the openness of communication, the appropriateness of follow-ups, and interaction with the patient. Training and the organization support in developing the relational competences, the facilitated assistance of the delimited scope of practice and team-based interdisciplinary care can be used to enhance the findings.

Evaluation Breakdown and Its applicability:

Within the context of the critical and emergency care, the paper appeals to some of the identified themes, including, but not limited to, cost, patient happiness, clinical outcomes, and quality of care. This relates to the quality of care, patient outcome, patient satisfaction, and cost-efficacy of models with nurse practitioner leadership. It adds to the debate on the effectiveness, resource efficiency, and focus of the acute care environment by identifying the unique strains of demand and potential gains of the emergency and critical care environment. The study incorporates many primary and systematic reviews and presents tendencies (waiting time decrease, mixed costs) and the overall ambiguity of the cost-effectiveness. Disadvantages: The study fails to offer a clear answer to the question. It emphasizes that the old evaluation procedures (the ones that are conceived before 2013) are outdated and should be replaced with a new synthesis that will guide policy and practice to where it can be now. - Caveats: This assessment requires the previous investigations and review studies, which have been updated until 2017, and thus there is an aspect of improvement regarding the study designs, context, and actual definition and practice of NP roles. It is challenging to compare studies because of the variety of NP scope, credentialing, and local legislation. Apparently, there exist a limit in the existing high-quality economic appraisals or standardized cost measures since the authors identify to the inconclusive evidence of cost-effectiveness.

Practice implications - Practice: With nurse practitioner scope expanded to include acute care, there is a potential to reduce bottlenecks in the process as long as nurse practitioner-led critical care and emergency care can reduce wait times without lowering the quality or safety. This existence of disparities in NP education and local jurisdiction of practice necessitates incorporation of the care pathways, definition of competences and roles.

- **Regulation and policy:** Missing an effective signal of cost-efficiency reminds us of the necessity to conduct thorough economic research and standard directives of the manner of

informing decisions on the level of staffing, reimbursement, and scope-of-practice rules. Funding of newer and better research that reflects the present realities of practice in the healthcare sector, such as improvement of electronic health records as well as team-based care systems, should be considered by the policymakers.

The issue of nurse practitioners (NPs) in a high acuity care setting has been addressed in this paper with the background that NPs can become an effective care team, and thus can be relevant in the discussion of collaboration and interdisciplinary practice. It has pointed to the need of new data after 2013 and absence of concrete economic results, which are critical to the current debates on cost-effectiveness and workforce planning, and suggests areas where new research should be taken. Apply these findings in regulation of practice, local NP education, and structure of practice as a team. These aspects impact the outcome and economic implications. It should be the focus on the consideration of the regulatory frameworks and the time that the study has been conducted when drawing the cost-effectiveness conclusions, and more attention should be paid to the recent data in the future.

Evaluation: - The paper provides the general overview of the nurse practitioners (NPs) and their role in improving the quality, efficiency, and patient satisfaction in other situations and countries. The findings of the primary care and hematology in Ireland and New Zealand are discussed, and the correlation between patient satisfaction and the wait time reduction is highlighted. The body of literature on the topic, specifically the NP-led models, offers substantial evidence to the effect patient experience is one of the most important predictors of satisfaction. The relative results in the locales and specialties of the work are limited in the sense that it is more of a narrative synthesis, as opposed to an actual meta-analysis. The NP research has outgrown the focus on description of roles to such goals as the satisfaction and the efficiency observed in the article. There are several studies that have been carried out regarding the perception of patients,

role clarity and cost savings. The paper can be enhanced by providing more information on the designs of the studies, control groups and confounder adjustments used in the identified studies and the practical implications of the change. In this way, although the research provides the evidences of the overall assumption that the NP care can be cost-effective and rewarding, it does not outline under what circumstances, and to what extent, these effects are to be expected. The idea of quantifying satisfaction is credible by the fact that the Nurse Practitioner Satisfaction Survey and other validated tools that were mentioned in the article. However, when using this survey on other health systems there is no serious evaluation of the measurement limit, possible bias of responses as well as cross cultural validity of the survey. As far as the matters connected with patient permission, role boundaries, and practice autonomy are concerned, it is concerning that only approximately half of the said studies are not blind in their admiration of the fact that ethical considerations do exist. This shows that the ethics about research are not always given the attention and it may influence the presented outcome. In case the ethical context was evaluated more accurately, the results could be interpreted more easily. - Despite the fact that the article says that most of the studies had sufficient sample sizes, it does not state specific information pertaining to statistical power, effect size, and estimating precision. Due to this, we cannot determine the levels to which NP will affect the satisfaction, cost and quality. The article identifies the positive attitudes towards the nurse practitioners (NPs) and the efficiency improvements they have brought but does not further discuss the possible limitations and uncertainty in the role of NP due to legislation about their scope of practice, their relationships with other professionals, or the lack of resources. This is due to the fact that this research will need to be used in case new policies or practices will be made.

The article contributes to the argument that NPs provide quality care in a myriad of cases but it might have provided some explicit comparisons

between physician-led care where the outcomes are standardized to underpin their argument. - Savings and cost-effectiveness: According to the narrative, NP care is capable of saving money, but does not provide any in-depth economic analyses to justify this claim, including cost-utility or budget-impaired estimates.

As far as patient satisfaction is concerned, it is determined that smaller wait time and some situations led by NPs lead to more patient satisfaction. However, more rigid and uniform reporting needs to be created in order to compare satisfaction in various specialties and settings. - Policy and scope of practice: The study gives some details on the way that the change in the role of NP would contribute to the efficiency and satisfaction, however, it does not present a more detailed view of the policy recommendation or the barriers to the implementation on a system-wide level. Nurse practitioner geriatric places of practice, interventions and outcomes across the globe.

Comparison of NP role in geriatric care and other outcomes implemented in different countries. Being aware of the reality that the Optum CarePlus model is highly covered in the literature, the authors develop a list of interventions and document health indices, functional conditions, symptom screening, medication review, and clinical outcomes. They do not study NP-led care individually but append that the outcomes that are reported in acute care will most probably reflect the influence of the inpatient geriatric consult teams. Among the limitations of the review, the authors mention several important issues: the geriatric-based review, the lack of quality assessment of the used studies, and the lack of uniformity of definition and terms of NP roles and terminology (e.g., "specialist nurse," "nurse clinician") and the inability to compare the education, autonomy, and scope of practice. Moreover, non-randomized research will not be considered in the formal manner. The authors unveil the following health priorities in terms of aging: the area of improving access, self-management, and costs management. Additionally, the NPs in this locality can help to

decrease the workload of geriatric physicians and increase accessibility.

Evaluation with analysis:

The method of scope of practice has rightfully established the many forms of intervention and their respective outcomes, and defines the degree of involvement of NPs in geriatric care. It becomes difficult to project the findings to other areas of NP practice, as quality assessment is not conducted and the literature is based on geriatrics.

- Focus on outcomes: In this article, it indicates the outcomes, which are pertinent to the geriatric quality of care indicators, such as the health indices, functional status, and medication review. In addition, it concedes that large part of the research lacks direct attention of the NP-specific effects of the acute care making it difficult to draw direct causal conclusions regarding the NP-led measures. Despite the fact that the financial outcomes and cost control are also defined as the themes of the review, the lack of the rigid synthesis of the cost-effectiveness is explained by the limitations of the study design and heterogeneity which also influences the economic considerations. That is in line with the authors themselves: they did not strive to quantify the effectiveness of the interventions, or the economic or patient impact, but summarize them.

- Conceptual variety: Education, autonomy and scope can barely be synthesised to identify the variation in the NP roles and nomenclature. It is also an indication of a more structural problem in the literature that alternate definitions of practice make comparing studies more difficult, as well as translating policies.

- Policy and practice implications: The review draws the focused attention to the potential benefits that nurse practitioners (NPs) may have in geriatric services, the possibility of extending the access and lessening the workload of family doctors. This is crucial data to the policy makers as well as the workforce planners. One should also be careful enough to draw conclusions on the effectiveness or cost-effectiveness of NP-led geriatric care due to the absence of quality assessment, and due to the heterogeneity of designs.

The article has played a significant role in enhancing our knowledge regarding the role of NP responsibilities in geriatric care as it relates to the issues of access, self-management and cost. Its identification of the extent and terms diversity assists in the discussion on how to simplify NP education and practice authorization in an endeavor to make the policies more comparable and uniform. The constraints of the design and scope of the study are insufficient to make any conclusion about the effectiveness of nurse practitioner (NP)-led care. However, the results do give credence to the idea that the NP interventions, implemented within the framework of the overall geriatric care models, could potentially affect the quality of the functional and symptomatic outcomes, and can be used to help sustain the cost at the lower level. (Turi et al. 2023; McMenamin et al. 2023)

Advanced practice nursing research with international perspective.

In essence, this paper gives the steps to be taken to conduct a detailed literature review on NPs and other advanced practice nursing in the world. The NPs will be involved in the health promotion, disease prevention, diagnostic testing, prescribing, and patient counseling and the scope of practice of the activities is supposed to encompass the scanning of the activities across settings. The protocol also focuses on costs-effectiveness, patient satisfaction, quality of care, and the role of nurse practitioners (NPs) in mitigating the hospital readmissions rates and emergency visits, management of chronic diseases and primary care and prevention, access, and equity, as well as optimization of resources. The report tries to fill in the gaps of the research both in the future and commenting on the legislation, regulatory, education, training outcomes, and foreign experiences. According to Kilpatrick et al. (2023), the review will include a summary of the results, scope of practice, and implications in the system level, and will not cover NPs without formal post-baccalaureate education or graduate education.

The care quality, patient outcomes, satisfaction, cost-effectiveness, readmissions, emergency

visits, chronic illness management, access/equity and efficiency are some of the clinically and systemically relevant outcomes of the protocol, which is a favorable sign of the critical review. This breadth is in tandem with the complexity of the modern healthcare systems that ensure that we can easily investigate the impacts of NPs to the latter. - International perspective: The protocol acknowledges that not all practice environments and regulatory frameworks can be indifferent to the effectiveness and use of NP and that it will use global experience to do that. This possible implementation into many different policy and health system settings thus becomes better.

- Eligibility: It should use nurse practitioners who have passed through post-baccalaureate/graduate-level education programs. This would help in keeping a comparability of practitioner preparation among studies and help more appropriately the reflection of the outcome of NP-level practice that more broad groups of clinicians might be trained to do.

- **Policy and education emphasis:** The protocol will recognize the importance of the impact that non-clinical care factors are having on the effectiveness and sustainability of NPs and workforce through evaluation of policy, regulation, and education outcomes.

Significant limitations: the article does not include synthesized results and quantitative scale of influence because it is a procedure and, consequently, it limited the capability of drawing abrupt conclusions. The systematic reviews will be included based on their success in the subsequent reviews and the quality of their information in subsequent research that will determine the contribution to reader that seeks a specific finding.

The work of NP and their practice areas, the healthcare systems in various countries and regions differ greatly, and this problem is a heterogeneity problem. Adequate stratification is needed to help in the pooling of the results of various systems since it can mask up the context-dependent effects. Where such review is based on systematic reviews, it will certainly be biased

similar to those studies. Indicatively, in case the negative outcomes are not being reported, the review may overstate the positive outcomes. The protocol ought to provide ways that can be employed to measure and reduce this bias. It requires specific, preset measures, as the quality of care, patient outcomes and cost-effectiveness are so broad to define the outcomes. The protocol should also include some definitions or clear taxonomies so that the protocol is uniform across the covered reviews.

The possible methodological framework of future synthesizes might be stratification by healthcare context (e.g., primary care, hospital, community) to adjust context effects in order to control the regulatory environment (e.g., scope of practice limitations or autonomy). The rigor of systematic reviews is different. - The quality of the reviews made. To conduct a sensitivity analysis and an estimate of the weight of evidence, it will be significant to use a standardized approach to assessment (like AMSTAR 2). - Time element: As the spheres of NP scopes and healthcare delivery models are ever-changing, it could be useful to separate the studies by the time frame when they were conducted and see how the quality of care and its outcomes have been enhanced throughout the years.

Article key point: NPs are independent clinicians capable of delivering a broad scope of quality care; they enhance patient outcomes, satisfaction, and cost-effectiveness; and they impact on the performance and accessibility of the system. The protocol advocates these assertions. It aims to assemble all possible research concerning the influence of NPs on the modern healthcare system, the chronic disease management, and the prevention care to make conclusions in these fields.

Conclusion

Each of the sources positions nurses practitioners (NPs) as qualified and independent medical professionals, which are capable of working in any given setting, which includes primary care,

geriatrics, surgery, and acute care. The implications of such issues as cost, accessibility, patient satisfaction and quality of provided treatment are important to this description. In thoroughly organized and collaborative practice settings, initial studies have shown that NP-assisted care could achieve patient outcomes as good as physician-assisted care. It means that evidence of the importance of the relationship between a nurse and a patient, continuity, and follow-up plays a key role in the quality of outcomes. The results on cost-efficiency are varied or diverse with practice models with regard to that there is variability in practice models, training, and regulatory frameworks, but NP involvement is linked to ongoing or enhanced quality of care and patient satisfaction in the perioperative, critical care, and emergency units. More generalized reviews give a view on the issues that are applicable to the system-level outcomes, such as the possible reduction of wait-time and increased access in situations of high demand, but also bring the opposing data about the relationships of the economy and the outcomes of the implementation of the scope-of-practice regulations at the regional level. However, the NP participation with functional condition, symptom control, medication review, and self-management has been observed to hold some significance in the broader aged-care approaches in the geriatric care literature and global outlooks. These aspects of NP impact that should be measured in different policy and educational settings and pursuant to the global protocol of appraising APRN research include quality of care, patient outcomes, patient satisfaction, cost-effectiveness, readmission, emergency visit, chronic disease management, system access, system equity, and system efficiency. In an attempt to arrive at strong findings regarding the NP contribution in the modern health systems, the proposed global synthesis emphasizes the necessity to possess the methodological rigor, which includes the formulation of definite results, quality rating, and situational stratification. Altogether, the data show that NPs are capable of providing quality care, to which patients may be satisfied with, and it can

have system-wide benefits, including the more convenient accessibility and the lower cost. However, to determine the most effective time and location of NP-led models, it is necessary to conduct a large, standard economic analysis and evaluation that take into account context. The prospective study must be concerned with the definite NP practice patterns, the high-quality economic analysis, and which would consider the current practice environment and scope of regulation, and clear methodology to be able to compare NP and physician outcomes.

References:

1. Bandy, K. (2005). Practice Patterns Contributing to Positive Patient Outcomes by Nurse Practitioners.
2. Fong Yeong Woo, B., Xin Yu Lee, J., & Wai San Tam, W. (2017). The impact of the advanced practice nursing role on quality of care, clinical outcomes, patient satisfaction, and cost in the emergency and critical care settings: a systematic review. ncbi.nlm.nih.gov
3. D Johnson, M. (2018). An Essential Perspective of Surgery: a Family Nurse Practitioner Clinical Care Model.
4. Chavez, K. S., Dwyer, A. A., & Ramelet, A. S. (2018). International practice settings, interventions and outcomes of nurse practitioners in geriatric care: A scoping review.
5. Kilpatrick, K., Savard, I., Audet, L. A., Kra-Friedman, A., Atallah, R., Jabbour, M., Zhou, W., Wheeler, K., Ladd, E., C. Gray, D., Henderson, C., A. Spies, L., McGrath, H., & Rogers, M. (2023). A global perspective of advanced practice nursing research: A review of systematic reviews protocol. ncbi.nlm.nih.gov
6. Porat-Dahlerbruch, Joshua, et al. "Understanding factors affecting the integration of geriatric nurse practitioners into health systems." *Journal of the American Association of Nurse Practitioners* 35.12 (2023): 813-825.
7. Connolly, Michael, et al. "Nurse Practitioner-Sensitive Outcome Measures

- in Older Person Care: A Scoping Review." *Journal of Advanced Nursing* (2025). wiley.com
8. Htay, M. and Whitehead, D. "The effectiveness of the role of advanced nurse practitioners compared to physician-led or usual care: A systematic review." *International Journal of Nursing Studies Advances*, 2021.
 9. McMEnamin, Amy, et al. "A systematic review of outcomes related to nurse practitioner-delivered primary care for multiple chronic conditions." *Medical Care Research and Review* 80.6 (2023): 563-581.
 10. Turi, Eleanor, et al. "The effectiveness of nurse practitioner care for patients with mental health conditions in primary care settings: A systematic review." *Nursing Outlook* 71.4 (2023): 101995.