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Effectiveness of Cancer Patient Navigator Program to Reduce Caregiver Burden: A Systematic Review

Efektivitas Program Navigator Pasien Kanker untuk Menurunkan Caregiver Burden: Systematic Review

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ABSTRACT

Background: Cancer is a major disease that significantly affects global public health. In Indonesia, the number of cancer patients continues to increase, requiring innovative approaches in the cancer care system.

Objective: his study aims to evaluate the effectiveness of cancer patient navigator programs in reducing caregiver burden, particularly among cancer patients.

Methods: This systematic review followed the PRISMA guidelines and used inclusion criteria that included full-text articles published in English and quantitative studies. Literature searches were conducted in various academic databases using relevant keywords.

Results: Out of 3,583 records retrieved, 6 studies met the criteria for further analysis. The results also showed that patient navigator programs can significantly reduce caregiver burden through improved education, emotional support, and access to healthcare services.

Conclusion: The implementation of cancer patient navigator programs in Indonesia has the potential to reduce caregiver burden and improve the quality of cancer patient care. Recommendations for further research and health policy are also included.

Keywords: Cancer; Caregiver Burden; Cancer Patient Navigator Program

ABSTRAK

Latar Belakang: *Kanker adalah penyakit utama yang berpengaruh signifikan terhadap kesehatan masyarakat global. Di Indonesia, jumlah pasien kanker terus meningkat, menuntut pendekatan inovatif dalam sistem perawatan kanker.*

Tujuan: *Penelitian ini bertujuan untuk mengevaluasi efektivitas program navigator pasien kanker dalam menurunkan caregiver burden, terutama di antara pasien kanker.*

Metode: *Sistematik review ini mengikuti pedoman PRISMA dan menggunakan kriteria inklusi yang mencakup artikel full text yang dipublikasikan dalam bahasa Inggris dan studi kuantitatif. Pencarian literatur dilakukan di berbagai database akademik dengan menggunakan kata kunci terkait.*

Hasil *Dari 3.583 catatan yang dihasilkan, 6 studi memenuhi syarat untuk analisis lebih lanjut. Hasil juga menunjukkan bahwa program navigator pasien dapat secara signifikan mengurangi caregiver burden melalui peningkatan edukasi, dukungan emosional, dan akses ke layanan kesehatan.*

Kesimpulan: *Implementasi program navigator pasien kanker di Indonesia berpotensi menurunkan beban pengasuh dan meningkatkan kualitas perawatan pasien kanker. Rekomendasi untuk penelitian lebih lanjut dan kebijakan kesehatan juga disertakan.*

Kata Kunci: *Kanker; Caregiver Burden; Program Navigator Pasien Kanker*

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INTRODUCTION

Cancer has a major impact globally, with cases increasing every year (WHO, 2020). Cancer is one of the leading causes of death worldwide, with an estimated 19.3 million new cases and nearly 10 million deaths in 2020 (WHO, 2020). In Indonesia alone, cancer is ranked seventh as the highest cause of death, with a prevalence of 1.8 per 1,000 population based on Basic Health Research data (Riskesdas, 2018). The impact of this disease is not only felt by patients, but also by family members who act as caregivers, who often face physical, emotional, and financial stress (Freeman & Rodriguez, 2011; Luke et al., 2020).

Caregivers play a crucial role in the care process of cancer patients, from accompanying them during therapy, assisting with medical decision-making, to providing daily emotional support. However, this constant burden can lead to long-term conditions of stress and burnout, known as caregiver burden (Chan et al., 2023). To respond to this challenge, patient navigator programs were developed, which are structured interventions to assist patients and their families in navigating complex healthcare systems by providing education, care coordination, and emotional and social support (Freeman & Rodriguez, 2011; Luke et al., 2020).

A number of studies have shown that the existence of a patient navigator program can improve adherence to treatment, speed up the diagnosis process, and reduce stress and uncertainty, both in patients and caregivers (Natale-Pereira et al., 2011). However, the implementation of this program in Indonesia is still not optimal and has not become an integrated part of the national oncology service system. In addition, most previous studies have focused on the benefits of the program on patients' clinical outcomes, while the effect on caregiver burden has not been widely studied, especially in the local context.

Thus, this systematic review is important as an effort to fill the gap in the literature. To date, no systematic review has specifically examined the effectiveness of patient navigator programs in reducing *caregiver* burden in cancer patients. The main focus of this review lies on evaluating the impact of the program on *caregiver* well-being, which is a differentiator from previous studies. Furthermore, this study also pays attention to the application of the program in the context of developing countries such as Indonesia.

Specifically, the aim of this review is to evaluate the effectiveness of the cancer patient navigator program in reducing caregiver burden, by reviewing aspects of education, emotional support, and ease of access to health services. It is hoped that the results of this review can provide a basis for developing policies and clinical practices that are more adaptive to the needs of caregivers in Indonesia.

MATERIALS AND METHODS

A. Research Design

The approach used in this study refers to the PRISMA framework, which is designed to support open tracking of the study selection process and enable clear and structured replication. This approach follows the PRISMA guidelines, to describe the number of studies at each stage of review, including details of eliminated articles and reasons for exclusion. With this approach, each stage is carried out systematically to avoid bias in the selection process. The main guideline used as a reference is the PRISMA 2020 Statement, which aims to improve the quality of systematic review reporting to be more thorough and transparent (Page et al., 2021).

1. Study Design

   This systematic review adopted an evidence-based approach to evaluate the effectiveness of a cancer patient navigator program in

reducing caregiver burden. The review process was conducted by referring to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure transparency and consistency in the implementation and reporting of results.

2. Literature Search Strategy
   The literature search was conducted without limitation of publication year, but filtered based on keywords relevant to the topic. The PICO (Population, Intervention, Comparison, Outcome) approach was used in formulating research questions and developing a systematic and targeted search strategy.
3. Study Selection and Review Process
   To reduce potential bias and increase the validity of the results, the review process was conducted using a double review mechanism. Three researchers independently selected the title, abstract, and full content of the article according to the predetermined inclusion and exclusion criteria. If there were differences in judgment, discussions were held until a mutual agreement was reached.
4. Study Quality Evaluation
   We used the Critical Appraisal Skills Program (CASP) as a tool for data management, article selection, information extraction, and methodological quality assessment of the selected studies.

B. Population and Sample

The study population included caregivers of cancer patients involved in the patient navigator program. The study sample was derived from studies that met the inclusion criteria in this systematic review.

C. Data Retrieval Technique

Data were obtained through systematic searches in various academic databases such as PubMed, Scopus, ProQuest, Science Direct, Elsevier, Nature, SpringerLink, and Cochrane. These databases were preferred as they are among the major databases in the field of health and medicine. The keywords used included "*Cancer patients*", "*Cancer patient navigator*", "*Caregiver burden*", and other relevant terms. The selection process followed the stages of identification, screening, eligibility assessment, and data synthesis of articles in accordance with the Critical Appraisal Skills Program (CASP) instrument and was conducted by researchers.

D. Research Instrumens

The main instrument used in this study was the application of inclusion and exclusion criteria applied in the systematic review. The inclusion criteria included full-text articles published in English, using a quantitative approach—whether RCT, cohort, case-control, or quasi-experimental studies—and specifically addressing the implementation of cancer patient navigator programs and their effect on caregiver burden. Exclusion criteria included review articles, meta-analyses, books or book chapters, and studies that were not relevant to the main focus or did not provide sufficient data on caregiver burden. Included articles were analyzed based on the use of caregiver measurement instruments such as the Zarit Burden Interview (ZBI), Caregiver Strain Index (CSI), and Hospital Anxiety and Depression Scale (HADS). The data collected includes the results of research on the effectiveness of patient navigators on caregiver burden.

E. Data Analysis Technique

Data were analyzed using the CASP instrument. The results from each study were compared based on the research design, sample size, main results, and

conclusions. The results were presented in tables and diagrams to facilitate interpretation.

Table 1. PICO

P (Problem)	I Intervention)	C (Comparison)	O (Outcome)
Caregivers of cancer patients	Cancer Patient Navigator Program	Usual care/ no patient navigator program	Decreased caregiver burden

RESULT AND DISCUSSION

A. Research Results

The initial search through electronic databases yielded a total of 3,537 records. Additional searches through other sources such as Nature, SpringerLink, ProQuest, Science Direct and Elsevier identified 46 additional records, bringing the total number of records collected to 3,583. After removal of duplicates, 1,121 records remained available for further screening and 951 records were excluded as they did not meet the inclusion criteria based on the abstracts and titles examined. A total of 170 full-text articles were assessed for eligibility based on the inclusion and exclusion criteria. From this process, 164 articles were excluded as they did not meet the criteria. A total of 6 studies were eligible and included in the systematic synthesis.

The results of the article screening are described in the following PRISMA table:

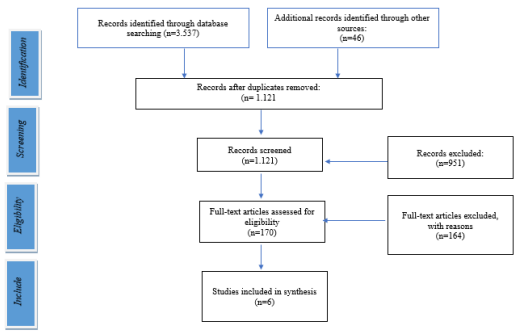

Figure 1. PRISMA

After initial screening, articles that did not meet the inclusion criteria were eliminated for the following reasons:

- Did not discuss patient navigator programs: 1,346 articles were excluded because they did not explicitly touch on the patient navigator aspect.
- Did not measure caregiver burden: 924 articles did not include caregiver burden as one of the variables or main focus of the study.
- Not a quantitative study: 717 articles were qualitative, so they did not fit the quantitative focus of this review.
- There were 283 articles not available in full text.

Of the total articles identified, only 6 studies met all inclusion criteria and proceeded to the eligibility assessment and data synthesis stages.

Table 2 columns P1 to P11 refer to the 11 questions in the quality assessment instrument used, adapted from the Critical Appraisal Skills Program (CASP), covering various aspects. Each cell in the table is filled with Y (*Yes*): The study met the criteria in that question, N (*No*): The study did not meet the criteria, UK (Unknown): Information not available or not clear enough, Neutral: The answer cannot be definitely classified as "Yes" or "No". This assessment was conducted by three independent researchers to ensure objectivity, and in case of disagreement, discussions were held until consensus was reached.

Table 2. Quality Appraisal

No.	Artikel	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
1	Benson et al., 2024	Y	Y	Y	Y	Y	Y	UK	Y	Y	Y	Y
2	Fiscella et al., 2012	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y

3	Devereux et al., 2019	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
4	Glassgow et al., 2019	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
5	Horne et al., 2015	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
6	Langballe et al., 2023	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

B. Discussion

The results of the data analysis in the table show that the cancer patient navigator program has a significant impact on reducing caregiver burden. Patient navigator programs act as a bridge between patients, caregivers, and the healthcare system (Wells et al., 2018). Article analysis showed that navigation interventions are effective in providing necessary education to caregivers, as well as access to relevant information regarding patient care (Kim et al., 2024; Teggart et al., 2023).

Table 3. Study Characteristics by Year and Geographic Region

No.	Author and Year	Country/ Region	Year of Publication	Study Design
1	Benson et al., 2024	United States of America	2024	Quasi-experimental
2	Fiscella et al., 2012	United States of America	2012	Experiment
3	Devereux et al., 2019	Canada	2019	Cross-sectional
4	Glassgow et al., 2019	English	2019	Longitudinal study
5	Horne et al., 2015	Australia	2015	Quantitative intervention
6	Langballe et al., 2023	Norway	2023	Cohort Study

In a study by Freeman & Rodriguez, (2011), it was explained that patient navigators not only help in providing information, but also support better decision-making in care. This is in line with findings showing that the presence of a navigator increases *caregiver* confidence in their role (Litzelman, 2019; Swanson & Koch, 2010; Thomas et al., 2023). Previous studies, such as those conducted by Natale-Pereira et al. (2011); Soto-Rubio et al. (2022), emphasized the importance of support provided by navigators in reducing psychological stress in caregivers. Data analyzed in the articles showed that caregivers supported by navigators felt more informed and better able to face challenges, which reduced anxiety and mental burden. Thus, the role of patient navigators in increasing knowledge and emotional support is crucial in the context of cancer care (Carroll et al., 2009).

Caregiver burden has complex dimensions, including physical, emotional, social, and financial aspects (Loo et al., 2022). Analysis showed that the cancer patient navigator program significantly reduced all aspects (Dixit et al., 2021). For example, caregivers involved in the navigation program reported significant reductions in stress and anxiety levels, which is also in line with findings in a study by Schulz & Eden (2016), Cui et al. (2024) found that caregiver burden can negatively impact quality of life, which we also observed in our data analysis.

Meanwhile, a study by Kokorelias et al. (2022) showed that while patient navigators have the potential to reduce caregiver burden, implementation challenges in the field often hinder their effectiveness. However, the authors' analysis shows that, despite these challenges, some interventions still provide

clear benefits in reducing caregiver burden, especially in Indonesia, which is still in the early stages of implementing this program.

C. Schematic of Results Review Discussion

1. Navigator as a Source of Information and Education
   Studies show that patient navigators play an important role in improving caregiver health literacy. The program provides access to accurate medical information and supports caregivers in making decisions regarding patient care (Kim et al., 2024; Teggart et al., 2023). This is in line with the Health Belief Model theory, which emphasizes the importance of perceptions of knowledge and benefits as a factor in behavior change.
2. Emotional Support and Stress Reduction
   The navigator program was shown to be effective in providing emotional support, which contributed to a decrease in caregiver stress and anxiety (Natale-Pereira et al., 2011). This study reflects an important element of Lazarus & Folkman's stress and coping theory, that the presence of social support strengthens an individual's coping mechanisms.
3. Strengthening Caregiver Roles and Quality of Life
   Patient navigators also increase caregivers' confidence in their role, and positively impact their quality of life (Freeman & Rodriguez, 2011; Litzelman, 2019). The study by Cui et al., (2024) confirmed that caregiver burden is negatively correlated with quality of life, emphasizing the importance of holistic interventions.
4. Program Implementation Challenges
   Despite its clear benefits, implementation of the navigator program still faces challenges, particularly in terms of resources, training of navigators, and systemic integration (Kokorelias et al., 2022). In Indonesia, there is no well-established navigator system, and this is an opening for evidence-based policy innovation.

Table 4. Research Characteristics

No.	Author, Year, Country	Destination	Design	Sample	Results			
					Depression	Anxiety	Psychological Distress	Satisfaction
1	(Benson et al., 2024) English	To evaluate the feasibility, acceptability, and appropriateness of a psychosocial support intervention provided by peers to family *caregivers of hospice* patients with cancer.	Pilot feasibility test without control.	112 *Caregivers of hospice* cancer patients	There was a significant decrease in the level of depressive symptoms after the intervention ($p<0.05$).	Anxiety levels also showed a significant decrease ($p<0.05$).	-	-

	(Fiscella et al., 2012)		*Randomized Controlled Trial*				There was no significant difference in the proportion of participants reporting low distress between the navigation and control groups.	
2	America	To evaluate the impact of patient navigation (PN) on treatment completion time, psychological distress, and patient satisfaction in cancer care.	(RCT)	438 patients with breast cancer and colorectal cancer	-	-	Female participants with low income, as well as those with part-time jobs were more likely to experience high distress.	-
3	(Devereux et al., 2019) America	To increase knowledge about colorectal cancer and screening, and help patients complete screening through patient navigation programs.	*Health Belief Model*	415 participants, with 358 participants meeting the eligibility criteria for screening	-	-	Of the 358 eligible participants, 178 (50%) completed the survey. Among the screened participants, 89% reported satisfaction with the program.	3
4	(Glassgow et al., 2019) America	To test the effectiveness of various patient navigation intensities and timely diagnostic resolution after abnormal mammography.	*Randomized controlled trial* (RCT)	The sample consisted of 9,506 women who were referred for mammograms.	-	-	-	Women who had contact with the navigator (both navigation and subset groups) had a faster time to

								resolution compared to those without contact.
5	(Horne et al., 2015) America	Analyzing the effectiveness of patient navigation in improving adherence to colorectal cancer screening in older African American adults.	*Randomized Controlled Trial* (RCT)	1,220 adults, aged 65 years and older, living in Baltimore, Maryland.	-	-	-	Analysis showed that the effectiveness of the intervention was stronger in participants aged 65-69 years.
6	(Langballe et al., 2023) America	Improve survival of vulnerable lung cancer patients through the NAVIGATE intervention, as well as test feasibility regarding recruitment, retention, attendance, adherence and acceptance.	*Feasibility study*	Of the 30 patients screened, 17 (56%) were considered susceptible and eligible for the study.	-	-	-	Based on the high level of participation and compliance, it can be concluded that most respondents are satisfied with the services provided.

CONCLUSION

The navigator program for cancer patients has been shown to be effective in reducing caregiver burden. The intervention was able to increase emotional support, expand access to information, and improve overall caregiver quality of life. With appropriate adjustments to the local context, this program has great potential to be integrated into the cancer care system in Indonesia. The findings may provide an important basis for policy formulation and the development of health services that are more responsive to caregiver needs.

Based on the contents of the article entitled "Effectiveness of Implementing the Cancer Patient Navigator Program in Reducing Caregiver Burden of Cancer Patients: Systematic Review," the following are the advantages and limitations of the study:

The focus of this study is unique because it focuses on the impact of the patient navigator program on caregiver burden, which has rarely been studied in depth in the Indonesian context.

Although this study emphasizes implementation in Indonesia, all of the studies analyzed are from overseas, so the results need to be further reviewed before being implemented in the local context directly.

RECOMMENDATIONS

Recommendations to improve the implementation of the patient navigator program include improving training for navigators, integrating the program in various health facilities, and strengthening multidisciplinary collaboration between health workers, research institutions, and non-governmental organizations. In addition, public awareness campaigns on the importance of the role of navigators and support for caregivers need to be conducted to reduce stigma and expand the reach of the program's benefits.

REFERENCES

Benson, J., Pitzer, K., Lindsay, R., Washington, K., & Oliver, D. P. (2024). 161 Peer Caregiver Navigation for Hospice Caregivers of Cancer Patients: A Feasibility Study. *Journal of Clinical and Translational Science*, *8*(s1), 48-49. https://doi.org/10.1017/cts.2024.155

Bernstein, A., Harrison, K. L., Dulaney, S., Merrilees, J., Bowhay, A., Heunis, J., Choi, J., Feuer, J. E., Clark, A. M., Chiong, W., Lee, K., Braley, T. L., Bonasera, S. J., Ritchie, C. S., Dohan, D., Miller, B. L., & Possin, K. L. (2019). The Role of Care Navigators Working with People with Dementia and Their Caregivers. *Journal of Alzheimer's Disease*, *71*(1), 45-55. https://doi.org/10.3233/JAD-180957

Carroll, J., Humiston, S. G., Salamone, C. M., Jean-Pierre, P., Epstein, R. M., & Fiscella, K. (2009). Patients' experiences with navigation for cancer care. *Journal of Clinical Oncology*, *27*(15_suppl), e17520-e17520. https://doi.org/10.1200/jco.2009.27.15_suppl.e17520

Chan, R. J., Milch, V. E., Crawford-Williams, F., Agbejule, O. A., Joseph, R., Johal, J., Dick, N., Wallen, M. P., Ratcliffe, J., Agarwal, A., Nekhlyudov, L., Tieu, M., Al-Momani, M., Turnbull, S., Sathiaraj, R., Keefe, D., & Hart, N. H. (2023). Patient navigation across the cancer care continuum: An overview of systematic reviews and emerging literature. *CA: A Cancer Journal for Clinicians*, *73*(6), 565-589. https://doi.org/10.3322/caac.21788

Coyne, P., Susick, L., Schultz, L., Santarossa, S., Gough, P., Rice, S., Brewster, N., Behrendt, R., & Bilicki, V. (2024). Using Care Navigation to Improve Patient-Reported Outcomes Among Older Adult Patients: Preliminary Results From a Pilot Study. *Journal of Patient Experience*, *11*. https://doi.org/10.1177/23743735241272152

Cui, P., Yang, M., Hu, H., Cheng, C., Chen, X., Shi, J., et al. (2024). The impact of caregiver burden on quality of life in family caregivers of patients with advanced cancer: a moderated mediation analysis of the role of psychological distress and family resilience. *BMC Public Health*, *24*, Article No. 817. https://doi.org/10.1186/s12889-024-18321-3

Devereux, P. G., Gray, J., Robinson, S., Galvin, J., & Gutierrez, J. (2019). Using Community Engagement and Navigators to Increase Colon Cancer Screening and Patient Outcomes. *Health Promotion Practice*, *20*(1), 85-93. https://doi.org/10.1177/1524839918757485

Dixit, N., Rugo, H., & Burke, N. J. (2021). Navigating a Path to Equity in Cancer Care: The Role of Patient Navigation. *American Society of Clinical Oncology Educational Book*, *41*, 3-10. https://doi.org/10.1200/EDBK_100026

Fiscella, K., Whitley, E., Hendren, S., Raich, P., Humiston, S., Winters, P., Jean-

Pierre, P., Valverde, P., Thorland, W., & Epstein, R. (2012). Patient Navigation for Breast and Colorectal Cancer Treatment: A Randomized Trial. *Cancer Epidemiology, Biomarkers & Prevention*, *21*(10), 1673-1681. https://doi.org/10.1158/1055-9965.EPI-12-0506

Freeman, H. P., & Rodriguez, R. L. (2011). History and principles of patient navigation. *Cancer*, *117*(S15), 3537-3540. https://doi.org/10.1002/cncr.26262

Glassgow, A. E., Molina, Y., Kim, S., Campbell, R. T., Darnell, J., & Calhoun, E. A. (2019). A Comparison of Different Intensities of Patient Navigation After Abnormal Mammography. *Health Promotion Practice*, *20*(6), 914-921. https://doi.org/10.1177/1524839918782168

Horne, H. N., Phelan-Emrick, D. F., Pollack, C. E., Markakis, D., Wenzel, J., Ahmed, S., Garza, M. A., Shapiro, G. R., Bone, L. R., Johnson, L. B., & Ford, J. G. (2015). Effect of patient navigation on colorectal cancer screening in a community-based randomized controlled trial of urban African American adults. *Cancer Causes & Control*, *26*(2), 239-246. https://doi.org/10.1007/s10552-014-0505-0

Kim, B., Wister, A., Mitchell, B., Li, L., & Kadowaki, L. (2024). Healthcare system navigation difficulties among informal caregivers of older adults: a logistic regression analysis of social capital, caregiving support and utilization factors. *BMC Health Services Research*, *24*(1), 1159. https://doi.org/10.1186/s12913-024-11549-0

Kokorelias, K., Posa, S., Gupta, T. Das, Ziegler, N., Cass, D., Landau, S., Gagliardi, L., Baker-Kuhn, R., & Hitzig, S. (2022). Patient Navigation to Improve Hospital to Home Transitions for Older Adults with Complex Needs and their Circle of Care. *International Journal of Integrated Care*, *22*(S3), 140. https://doi.org/10.5334/ijic.ICIC22063

Langballe, R., Svendsen, L., Jakobsen, E., Dalton, S. O., Karlsen, R. V., Iachina, M., Freund, K. M., Leclair, A., Jørgensen, L. B., Skou, S. T., Ehlers, J. H., Torenholt, R., Svendsen, M. N., & Envold Bidstrup, P. (2023). Nurse navigation, symptom monitoring and exercise in vulnerable patients with lung cancer: feasibility of the NAVIGATE intervention. *Scientific Reports*, *13*(1), 22744. https://doi.org/10.1038/s41598-023-50161-w

Litzelman, K. (2019). Caregiver Well-being and the Quality of Cancer Care. *Seminars in Oncology Nursing*, *35*(4), 348-353. https://doi.org/10.1016/j.soncn.2019.06.006

Loo, Y. X., Yan, S., & Low, L. L. (2022). Caregiver burden and its prevalence, measurement scales, predictive factors and impact: a review with an Asian perspective. *Singapore Medical Journal*, *63*(10), 593-603. https://doi.org/10.11622/smedj.2021033

Luke, A., Luck, K. E., & Doucet, S. (2020). Experiences of Caregivers as Clients of a Patient Navigation Program for Children and Youth with Complex Care Needs: A Qualitative Descriptive Study. *International Journal of Integrated Care*, *20*(4). https://doi.org/10.5334/ijic.5451

Natale-Pereira, A., Enard, K. R., Nevarez, L., & Jones, L. A. (2011). The role of patient navigators in eliminating health disparities. *Cancer*, *117*(S15), 3541-3550. https://doi.org/10.1002/cncr.26264

Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. https://www.bmj.com/content/bmj/372/bmj.n71.full.pdf

Pratt-Chapman, M. L., Silber, R., Tang, J., & Le, P. T. D. (2021). Implementation factors for patient navigation program success: a qualitative study. *Implementation Science Communications*, *2*(1), 141. https://doi.org/10.1186/s43058-021-00248-0

Riskesda. (2018). https://dinkes.babelprov.go.id/sites/default/files/dokumen/bank_data/20181228%20-%20Laporan%20Riskesdas%202018%20Nasional-1.pdf

Rocque, G. B., Dionne-Odom, J. N., Stover, A. M., Daniel, C. L., Azuero, A., Huang, C.-H. S., Ingram, S. A., Franks, J. A., Caston, N. E., Dent, D. A. N., Basch, E. M., Jackson, B. E., Howell, D., Weiner, B. J., & Pierce, J. Y. (2022). Evaluating the implementation and impact of navigator-supported remote symptom monitoring and management: a protocol for a hybrid type 2 clinical trial. *BMC Health Services Research*, *22*(1), 538. https://doi.org/10.1186/s12913-022-07914-6

Schnitzer, S., Kohl, R., Fügemann, H., Gödde, K., Stumm, J., Engelmann, F., Grittner, U., & Rieckmann, N. (2022). Patient Navigation-Who Needs What? Awareness of Patient Navigators and Ranking of Their Tasks in the General Population in Germany. *International Journal of Environmental Research and Public Health*, *19*(5), 2846. https://doi.org/10.3390/ijerph19052846

Schulz, R., & Eden, J. (Eds.). (2016). *Families Caring for an Aging America*. National Academies Press. https://doi.org/10.17226/23606

Soto-Rubio, A. L., Valero-Moreno, S., & Pérez-Marín, M. (2022). Benefits of a support program for family caregivers of patients at the end of life: A randomized controlled trial. *Journal of Health Psychology*, *27*(1), 199-210. https://doi.org/10.1177/1359105320944993

Swanson, J., & Koch, L. (2010). The Role of the Oncology Nurse Navigator in Distress Management of Adult Inpatients With Cancer: A Retrospective Study. *Oncology Nursing Forum*, *37*(1), 69-76. https://doi.org/10.1188/10.ONF.69-76

Teggart, K., Neil-Sztramko, S. E., Nadarajah, A., Wang, A., Moore, C., Carter, N., Adams, J., Jain, K., Petrie, P., Alshaikhahmed, A., Yugendranag, S., & Ganann, R. (2023). Effectiveness of system navigation programs linking primary care with community-based health and social services: a systematic review. *BMC Health Services Research*, *23*(1), 450. https://doi.org/10.1186/s12913-023-09424-5

Thomas, R., Pesut, B., Siden, H., Treschow, M., & Puurveen, G. (2023). Developing competencies for volunteer navigators to support caregivers of children living with medical complexity: a mixed-method e-Delphi study. *Palliative Care and Social Practice*, *17*. https://doi.org/10.1177/26323524231209060

Valaitis, R. K., Carter, N., Lam, A., Nicholl, J., Feather, J., & Cleghorn, L. (2017). Implementation and maintenance of patient navigation programs linking primary care with community-based

health and social services: a scoping literature review. *BMC Health Services Research*, *17*(1), 116. https://doi.org/10.1186/s12913-017-2046-1

Wells, K. J., Battaglia, T. A., Dudley, D. J., Garcia, R., Greene, A., Calhoun, E., Mandelblatt, J. S., Paskett, E. D., & Raich, P. C. (2008). Patient navigation: State of the art or is it science? *Cancer*, *113*(8), 1999-2010. https://doi.org/10.1002/cncr.23815

Wells, K. J., Valverde, P., Ustjanauskas, A. E., Calhoun, E. A., & Risendal, B. C. (2018). What are patient navigators doing, for whom, and where? A national survey evaluating the types of services provided by patient navigators. *Patient Education and Counseling*, *101*(2), 285-294. https://doi.org/10.1016/j.pec.2017.08.017

WHO. (2020). *Cancer fact sheet.* https://www.who.int