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EXPERT OPINION

Patient Education in Chronic Kidney Disease: A Position Statement of the Polish Society of Nephrology

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Abstract: Chronic kidney disease (CKD) is an increasing public health challenge, affecting about 11% of adults worldwide. Kidney diseases are now the third fastest-growing cause of death globally, and the number of patients reaching end-stage kidney disease continues to rise, resulting in growing demand for renal replacement therapy. A variety of clinical and individual factors influence the management of the disease. However, meaningful patient participation in this process is only possible when patients possess adequate knowledge of their disease and treatment options. Patient education is therefore a fundamental component of CKD management. It promotes behaviors that improve disease control and slow disease progression, while empowering patients to actively engage in shared decision-making and enhancing quality of life. Although both Polish and international guidelines highlight the need for structured education and its integration into comprehensive care models, practical recommendations on how such programs should be organized remain scarce. This article presents an expert opinion based on clinical experience and current literature. The recommendations outline key principles for designing and implementing high-quality educational initiatives that can be applied across nephrology centers and tailored to different stages of CKD. They also provide a framework for establishing a nationwide nephrology education system built on best practices and evidence-based standards.

Keywords: chronic kidney disease, education, educational program, patient-centered care, shared decision-making

Introduction

Chronic kidney disease (CKD) represents a growing public health challenge in modern societies, as evidenced by a nearly 30% rise in its overall prevalence between 1990 and 2017.[1] This global increase in CKD incidence is primarily driven by population aging and the rising prevalence of diabetes, which is one of the leading etiological factors of CKD. According to the most recent data, CKD affects approximately 11% of the adult population.[2,3] The age-standardized mortality rate for CKD patients has increased by 2.8% over the past 27 years. Although this percentage may seem modest, given the high prevalence of CKD, it translated into 1.2 million deaths worldwide in 2017. In Poland, while the number of recorded CKD cases exceeded 690,000 in 2022, estimates suggest the actual number of individuals affected may be around 4.5 million, with projections indicating an increase to over 5 million within the next decade.[4] Kidney diseases are currently the third fastest-growing cause of death globally, and forecasts suggest that by 2040, CKD-related deaths could reach 4 million annually worldwide.[1] The growing number of CKD patients, including those with end-stage kidney disease (ESKD), is accompanied by increased demand for renal replacement therapies. Between 1990 and 2017, the global age-standardized rates for dialysis and kidney transplants increased by 10.7% and 12.8%, respectively.[1] Nevertheless, the number of patients requiring renal replacement therapy (RRT) is expected to continue rising, potentially

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reaching 5.4 million worldwide by 2030.[5] In Poland, almost 21,000 patients underwent dialysis in 2024, the vast majority (96%) receiving hemodialysis, while less than 4% were treated with peritoneal dialysis (PD).[6] This is notably lower than the proportion reported in the literature, which indicates that PD accounts for approximately 11% of all dialysis modalities.[7] This is rather surprising, considering that PD offers several advantages over hemodialysis, including better survival rates during the initial years of therapy, lower risk of droplet and bloodstream infections, reduced need for specialized personnel, and -importantly - greater flexibility that allows patients to maintain normal daily activities.[7] On the other hand, hemodialysis remains the most common form of dialysis, and its technology and availability have significantly advanced over the past decade.[8]

In turn, the number of kidney transplantations in Poland reached 1,259 in 2024, including 137 pre-emptive procedures (10.9%) and 82 transplants from living donors (6.5%), while 1,157 patients remained registered on the National Waiting List at the end of that year. These figures underscore the need to expand initiatives to increase both preemptive transplantation and living donor programs.[6]

The choice of RRT depends on multiple factors, with patient preference—alongside medical considerations—playing a key role. However, meaningful participation in therapeutic decision-making is only possible when patients have adequate knowledge about their condition and the available treatment options. This information must be comprehensive and derived from reliable sources. Therefore, patient education is a critical and indispensable component of the therapeutic process for managing any chronic illness. Education not only promotes behaviors that enhance disease control and slow disease progression, but also empowers patients to engage actively and consciously in decision-making, ultimately leading to improved quality of life.[9,10]

Patient involvement in diagnostic and therapeutic decision-making is known as shared decision-making. This collaborative model forms the cornerstone of person-centered care, which prioritizes the individual's goals and values and is endorsed by numerous clinical guidelines.[11–13] In shared decision-making, patients and healthcare professionals jointly make medical decisions, addressing both immediate needs and long-term care planning. Shared decision-making typically involves six steps: inviting the patient to engage in the process, presenting available treatment options, providing information on the benefits and risks of each method, collaboratively evaluating the options based on the patient's preferences and concerns, reaching a shared decision, and supporting the implementation of the selected course of action.[14] A characteristic feature of this approach is sensitive, culturally appropriate, and equitable communication, along with a partnership between patient and physician. Shared decision-making enables patients to make informed choices about their care, including the decision to forgo burdensome or intensive treatments in favor of continuing current conservative management.[11,15]

The need for patient education in CKD is emphasized in both Polish and international clinical guidelines, which recommend integrating education into optimal care models.[13,16] However, these guidelines lack detailed recommendations on how education should be integrated—an issue addressed in this document—and do not outline how such programs should be organized.[13,17,18] An effective patient education program is a key component of strategies supporting self-management and may lead to measurable outcomes, including increased preference for PD and even reduced mortality.[13,19] Although most literature on CKD education focuses on pre-dialysis stages, Poland currently lacks a standardized national program for either pre-dialysis or general CKD education. Consequently, such education is neither mandatory nor publicly funded. Patients with advanced CKD receive information about available treatment options in an unstandardized manner, which varies across healthcare centers. As a result, it is currently difficult to assess the effectiveness of these educational efforts and their actual benefits.

In light of this gap, and given the significant progress made in pharmacological nephroprotection in recent years, the Polish Society of Nephrology (PTN) has recently developed and published position statements on the management of patients with CKD.[20,21] We believe that a key barrier to implementing modern therapeutic advances in CKD lies in the difficulty clinicians face when adopting fundamental changes to treatment algorithms, and in the challenges that patients encounter in adhering to these therapies—often stemming from inadequate understanding of their condition. In response to these issues and recognizing the growing need to improve CKD patient care, the PTN has developed these comprehensive recommendations (summarized in Table 1), which specify the key principles for designing and delivering patient education. These recommendations aim to support the implementation of consistent, high-quality educational

Table 1 Summary of Recommendations for Educational Programs for Patients with Chronic Kidney Disease (CKD)

No.	Recommendation Area	Recommendation
1	Educational program model	The optimal educational model should include: 1. basic education 2. specialized education A. general B. detailed.
2	Target population	All patients with CKD should have access to education throughout the disease course. Basic education should be provided at diagnosis, while specialized education should be delivered as the disease progresses—general for stages G1–G3 and detailed for stages G4–G5. When appropriate, and with the patient's consent, family members and caregivers should also be involved in the educational process.
3	Optimal timing for implementing the educational program	Education aligned with the stage of CKD should be initiated as early as possible to enable informed therapeutic decision-making.
4	Program delivery and implementation	The location and format of CKD education should correspond to the stage of disease progression. Basic education should be delivered as part of coordinated care in primary healthcare settings. General specialized education should be provided in nephrology outpatient clinics, while detailed specialized education—in dedicated dialysis centers. Specialized education should be offered through publicly funded consultations, delivered—depending on local resources—by a nephrologist, nurse, and/or trained medical educator. This may include group sessions and topic-specific webinars. The optimal model involves delivering both levels of specialized education in dedicated educational centers. Regardless of the setting, patients should receive comprehensive information about all available treatment options. Ideally, the educational team should be expanded to include additional specialists based on the patient's individual needs.
5	Additional professional support	Education for patients with CKD should be comprehensive and delivered by a multidisciplinary team that includes, in addition to a nephrologist and a nurse, specialists in psychology, social work, nutritional, rehabilitation, and health promotion. This support may be coordinated in collaboration with relevant specialty clinics and should ideally be initiated at the primary care level.
6	Scope of the educational program	Educational programs for patients with CKD should be based on current scientific evidence, have clearly defined goals and objectives, and support the development of patient competencies in self-management. Program content should be tailored to the stage of CKD, its underlying cause, and the risk of disease progression. Basic education should introduce patients to the nature of CKD, its general health implications and the principles of nephroprotection. General specialized education should focus on a detailed explanation of the disease course, available treatment options, dietary recommendations, and strategies for slowing disease progression. Advanced specialized education should comprehensively prepare patients for renal replacement therapy (dialysis or transplantation) or for the continuation of conservative management. To ensure consistency and maintain high standards of education, comprehensive and stage-specific educational schedules should be developed. These should address both early and advanced stages of CKD and organize content into smaller, easily digestible segments.
7	Formats of educational program delivery	Educational programs for patients with CKD should be formalized and delivered in a systematic manner. In the early stages of the disease, education is recommended to be provided by primary care physicians and nurses, supplemented by nationwide webinars. An exemplary model of care includes low-clearance clinics that provide continuous education through a multidisciplinary team approach. Programs can be delivered individually or in small groups of patients at similar stages of disease progression. Active learning methods—such as group discussions, case studies, and simulations—are strongly encouraged. The use of digital tools (eg, mobile apps, online platforms) is particularly valuable for patients with limited access to care centers. Knowledge retention and assessment should be supported by quizzes and tests.

(*Continued*)

Table 1 (Continued).

No.	Recommendation Area	Recommendation
8	Educational materials	Educational programs for patients with CKD should incorporate various formats—verbal, written, visual, and multimedia—to better align with patients' individual needs and preferences. It is recommended to use verified sources of information, including patient-oriented websites, educational materials from medical device and pharmaceutical companies, publications by scientific societies and patient advocacy organizations, as well as content from professional journals.
9	Training of educational teams	Team members responsible for patient education should receive appropriate training in both CKD-specific clinical knowledge and communication skills. It is recommended that academic and clinical centers involved in educational programs provide specialized support. Training should also encompass developing soft skills, including effective communication, motivational techniques, and the ability to tailor educational content to meet patients' individual needs.
10	Quality control and evaluation of educational effectiveness	Ongoing monitoring and regular evaluation of educational programs are essential to ensure their quality and effectiveness. Systematic audits should be implemented, covering both program-level indicators (eg, number of patients educated, treatment modality choices, the proportion of patients undergoing pre-emptive transplantation, the number of patients initiating dialysis with a planned vascular access, and participant satisfaction) and individual patient outcomes (eg, clinical parameters, hospitalization rates, quality of life). The use of electronic tools can support efficient data collection and analysis.

initiatives that can be applied across various centers and tailored to the needs of patients at different stages of disease progression. They also provide the foundation for a nationwide nephrology education system based on best practices and current clinical evidence. According to the authors of this position statement, patient education in CKD should be considered a standard component and an integral part of a structured, publicly funded therapeutic pathway.

This position statement was developed by a Committee appointed by the Board of the PTN, comprising experts in nephrology, internal medicine, and related disciplines. Before the study commenced, participants provided informed consent to share their opinions. A narrative review of the literature was conducted, encompassing current scientific evidence and national and international clinical guidelines. The recommendations were formulated through a series of working meetings and iterative internal reviews to achieve expert consensus. The final version of the document was reviewed and approved by the PTN's Main Board.

Recommendation 1

Educational Program Model

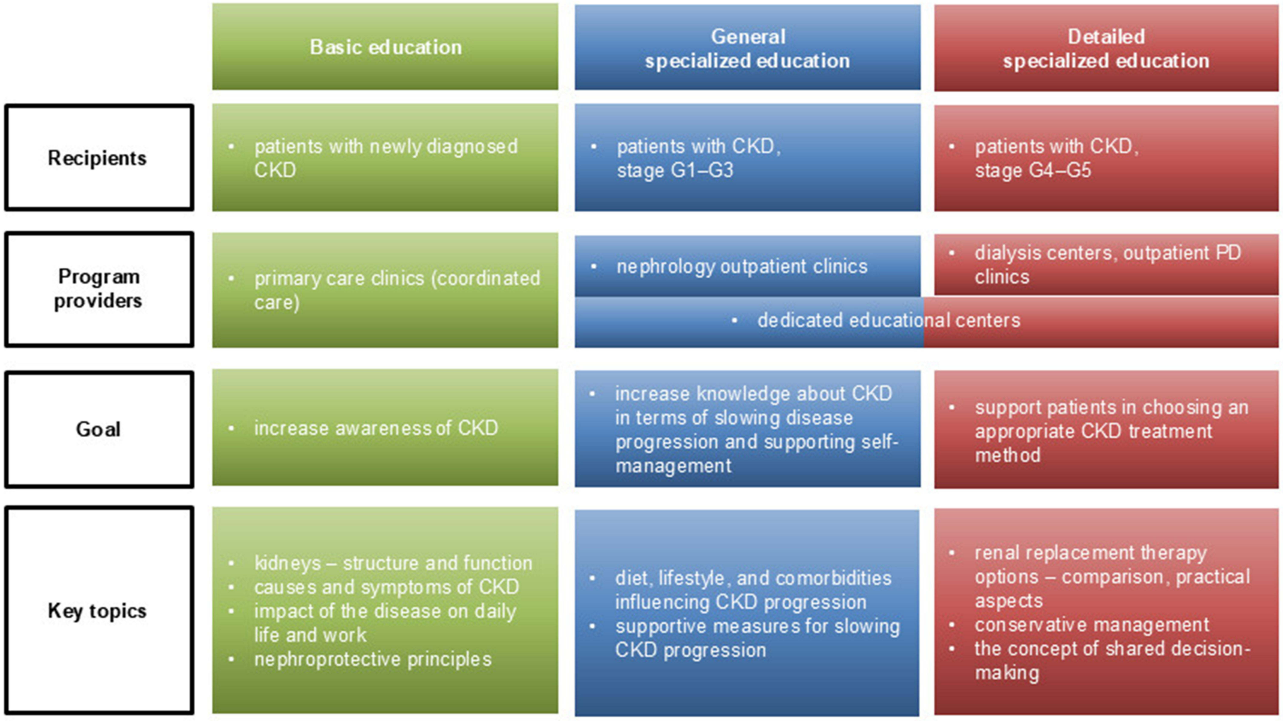
An optimal educational framework for patients with CKD should include the following components (Figure 1):

1. Basic education
2. Specialized education

A. General
B. Detailed
[expert opinion]

Commentary

Dividing CKD patient education into basic and specialized tiers (with the latter subdivided into general and detailed levels) is justified from both clinical and practical perspectives. CKD is a progressive disease, and patients' informational and decision-making needs change throughout its course. A tiered (in effect, three-tiered) educational model facilitates the delivery of content tailored to the patient's current needs and learning level. It also promotes greater patient engagement in the therapeutic process and may lead to improved prognosis and quality of life. Although chronic kidney disease is typically a progressive condition requiring continuous updating of patient education over time, it should be acknowledged that a substantial proportion of patients are first diagnosed at an advanced stage of the disease. In Poland,



	Basic education	General specialized education	Detailed specialized education
Recipients	- patients with newly diagnosed CKD	- patients with CKD, stage G1–G3	- patients with CKD, stage G4–G5
Program providers	- primary care clinics (coordinated care)	- nephrology outpatient clinics - dedicated educational centers	- dialysis centers, outpatient PD clinics - dedicated educational centers
Goal	- increase awareness of CKD	- increase knowledge about CKD in terms of slowing disease progression and supporting self-management	- support patients in choosing an appropriate CKD treatment method
Key topics	- kidneys – structure and function - causes and symptoms of CKD - impact of the disease on daily life and work - nephroprotective principles	- diet, lifestyle, and comorbidities influencing CKD progression - supportive measures for slowing CKD progression	- renal replacement therapy options – comparison, practical aspects - conservative management - the concept of shared decision-making

Figure 1 Key components of the proposed educational program model for patients with chronic kidney disease.
Abbreviations: CKD, chronic kidney disease; PD, peritoneal dialysis.

late detection of CKD remains a major clinical challenge, and patients frequently present to healthcare services for the first time with end-stage kidney failure, often requiring urgent initiation of renal replacement therapy. Educational strategies must therefore be flexible and adaptable to both individuals identified early in the disease course and those who enter care at later stages, given the rapidly evolving and complex clinical needs.

Recommendation 2

Target Population for the Educational Program

- Patients with chronic CKD should have access to education at all stages of the disease.
- Basic education should be offered at the time of diagnosis, while patients in early and advanced stages should receive specialized education—general education for stages G1–G3 and detailed education for stages G4–G5.
- When appropriate and with the patient's consent, family members and caregivers should also be involved in the educational process.

[expert opinion]

Commentary

Educational programs enhance awareness of the disease, its progression, and available treatment options, thereby improving adherence to medical and dietary recommendations. These programs contribute to slowing disease progression, reducing complications and hospitalizations, and increasing patient autonomy. Consequently, they offer benefits not only to patients at various stages of CKD but also to the healthcare system as a whole.[13,22]

Although many studies on CKD education have focused on patients at advanced stages of the disease, evidence indicates that education is also beneficial in earlier stages and even in prevention. It can support healthier dietary habits, promote lifestyle modifications, improve understanding of causal relationships and disease trajectories, and increase awareness of CKD and its comorbidities. Ultimately, this may slow CKD progression and even delay the initiation of dialysis.[23,24] Moreover, while general awareness of CKD remains low, it tends to be higher among individuals in more advanced stages—underscoring the importance of initiating education early in the disease course.[25,26]

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In CKD stages G4–G5, patient education is essential for therapeutic decision-making. At this stage, individuals are often required to make a fundamental choice between initiating RRT or continuing conservative management.[27] This decision can be particularly challenging because many patients encounter it late in the disease course, at a time when they may be experiencing considerable psychological distress or anxiety.[28] Research shows that patients who receive education about ESKD treatment options tend to report lower levels of anxiety and are more likely to choose PD compared to those who do not receive such education.[29,30]

The patient's immediate social environment also plays a crucial role in the treatment process. Involving family members and caregivers in CKD educational programs facilitates self-management, supports care coordination, and strengthens the patient's sense of safety and emotional support.[13] This, in turn, equips patients to manage the challenges of the disease better and increases their motivation to adhere to therapeutic recommendations. Moreover, educating families and caregivers may help promote living donor kidney transplantation.

Recommendation 3

Optimal Timing for Implementing the Educational Program

- Education tailored to the stage of CKD should be initiated as early as possible to enable patients to make informed therapeutic decisions.

[expert opinion]

Commentary

Timely implementation of patient education is crucial in advanced stages of CKD, as some treatment-related decisions must be made well in advance of therapy commencement. For example, the creation of an arteriovenous fistula, required for hemodialysis, should be established several months before the anticipated initiation of dialysis.[13] Detailed specialized education on RRT should begin no later than 12 months before the expected start of dialysis—or immediately after referral for dialysis treatment—and, ideally, should be introduced during stages G4–G5 of CKD.[31]

Importantly, early assessment for kidney transplantation should be an integral component of care for patients with CKD. A crucial aspect of patient training and comprehensive management is the earliest possible identification of individuals eligible for timely kidney transplantation, including *pre-emptive* transplantation. For suitable candidates, avoiding dialysis altogether represents the most desirable form of renal replacement therapy, as pre-emptive transplantation is associated with superior clinical outcomes and quality of life compared with initiating dialysis prior to transplantation.

Recommendation 4

Implementers of Educational Programs

- The location and format of CKD patient education should be adapted to the stage of disease progression:
    - Basic education should be delivered as part of coordinated primary care;
    - General specialized education should take place in nephrology outpatient clinics;
    - Detailed specialized education should be provided in dedicated dialysis centers.

An optimal approach would involve delivering both levels of specialized education (general and detailed) through dedicated educational centers.

- Regardless of the setting, patients should receive comprehensive information about all available treatment options.
- The educational team should, at a minimum, include a nephrologist and a nephrology nurse. Following appropriate training, medical educators may also participate in the educational process, and ideally, other specialists may be involved, depending on the patient's specific needs.

[expert opinion]

Commentary

Primary care physicians, nephrologists, and nurses each play a key role in delivering accurate information to patients and supporting informed decision-making regarding RRT or the continuation of conservative management. Studies indicate that approximately half of CKD patients rely primarily on their nephrologist for information about their condition, nearly one-quarter consult primary care physicians, and about one-fifth use both sources equally. Patients with a longer history of nephrology care are more likely to view nephrologists as their primary source of health information.[32] Nurses, on the other hand, often have more frequent interactions with patients and are therefore well-positioned to assume a central role in the educational process.[31] An interdisciplinary team of specialists can provide comprehensive education, not only about the disease and its treatment but also in other areas that may significantly affect the patient's quality of life.[13]

Recommendation 5

Additional Professional Support

- Patient education in CKD should be comprehensive and, ideally, delivered by a multidisciplinary team that includes a nephrologist, a nurse and/or a medical educator trained in kidney disease, as well as specialists in psychological support, social services, nutrition, rehabilitation, and health promotion. This support may be organized in collaboration with relevant specialist clinics and should be initiated at the primary care level.

[expert opinion]

Commentary

As with other chronic illnesses, patients with CKD present with complex and evolving needs that vary depending on the stage of kidney failure. Individualized and comprehensive care is therefore essential, addressing not only disease-specific treatment but also psychosocial and lifestyle-related factors.[10] A central component of this approach is lifestyle modification, which should be considered a frontline therapeutic strategy. Behavioral habits, such as smoking cessation, alcohol reduction, adoption of a healthy diet, and engagement in regular physical activity, can favorably impact the disease trajectory and slow its progression.[33] A well-balanced diet that includes nutrient-dense, low-sodium foods high in fibre, vitamins, and minerals has been shown to delay CKD progression.[34] Psychological support is also a critical element of patient education. Many individuals with CKD experience depression or generalized anxiety, both of which may compromise adherence to treatment plans.[35] For these reasons, the optimal composition of the educational team should include, in addition to nephrologists and nurses experienced in all forms of RRT, specialists who can address patients' specific needs. These include:

- A psychologist, responsible for implementing interventions to reduce anxiety and depressive symptoms, and for helping patients cope with the diagnosis and treatment process;
- A social worker, who offers guidance and support related to employment, education, financial aid, social benefits, and caregiver leave;
- A dietitian, who provides individualized nutritional recommendations tailored to the stage and etiology of the disease, as well as to the patient's dietary habits, preferences, and socioeconomic situation;
- A physiotherapist, who develops rehabilitation programs to support physical activity and maintain or improve functional capacity;
- A health promotion specialist, who educates patients on lifestyle behaviors such as regular exercise, weight management, vaccination, and smoking cessation; and
- A patient representative—an individual with lived experience of CKD—who volunteers as a peer mentor to support fellow patients through shared experience and participation in support groups.

While the involvement of additional professionals plays an undeniably important role in the comprehensive education of CKD patients, integrating all forms of support within a single center may not always be feasible. Therefore, collaboration with relevant specialist services—such as psychological, nutritional, or rehabilitation clinics—as well as with patient

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associations and support groups, should be considered. Importantly, this support should be initiated at the primary care level.

Recommendation 6

Scope of Educational Programs

- Educational programs for patients with CKD should be based on current scientific evidence, have clearly defined goals and objectives, and support the development of patients' self-management competencies.
- Educational content should be flexibly tailored to each patient's individual needs.
- A comprehensive and stage-specific educational schedule should be developed to address both the early and advanced stages of CKD, organizing content into smaller, easily digestible segments.
- The scope of educational content should align with the patient's disease stage, underlying etiology, and risk of progression.
  - Basic education should provide information about the nature of CKD, its general health consequences and the principles of nephroprotection.
  - General specialized education should focus on a detailed discussion of disease progression, all available therapeutic options, dietary guidance, and strategies for slowing the progression of CKD.
  - Detailed specialized education should comprehensively prepare patients for RRT (dialysis or transplantation) or for the continuation of conservative management. This phase should address clinical, organizational, and decision-making aspects of care.

[expert opinion]

Commentary

Effective education for patients with CKD requires an individualized, patient-centered approach. The educational process should begin with an assessment of each patient's specific learning needs, enabling content to be tailored to their personal priorities and targeted health behaviors. Although every patient requires a tailored plan, many individuals—and their caregivers—commonly share similar gaps in knowledge and self-management skills. Therefore, it is reasonable to develop a standardized educational program that addresses core learning objectives applicable to most patients, while allowing for adaptation to individual circumstances.[9,13,36]

According to current recommendations, CKD educational programs should cover three main thematic areas: general knowledge about CKD, strategies to slow disease progression and prevent complications, and information about all available treatment options.[13,34,37,38]

In early and moderate stages of CKD, patient awareness of the diagnosis is often limited, posing a significant barrier to effective care. Thus, general education should include a clear explanation of CKD and its potential impact on the body. Patients should be provided with basic information about kidney function, along with guidance on how CKD may affect their daily life, social interactions, employment opportunities, and financial situation, including eligibility for social support and benefits. It is equally important to guide patients toward appropriate psychological support and coping strategies for managing a chronic illness.

Progression of CKD and the occurrence of complications are influenced not only by the underlying disease but also by the use of widely available over-the-counter medications (eg, nonsteroidal anti-inflammatory drugs, proton pump inhibitors, vitamins, and herbal supplements), dietary habits, lifestyle choices such as tobacco use, and the presence and management of comorbidities like hypertension, diabetes, and dyslipidemia. Improving patient awareness through structured education and access to reliable educational materials can significantly enhance disease self-management and improve clinical outcomes. Accordingly, educational initiatives aimed at slowing CKD progression should prioritize lifestyle and dietary modification strategies. Patients should be informed about practical steps they can take to support kidney function, as well as about commonly prescribed medications and available treatment strategies that may slow disease progression (nephroprotective therapy) and prevent complications.

Given the high prevalence of multilevel atherosclerosis in patients with CKD, including renal vascular involvement, patient education should also encompass basic principles of atherosclerosis and cardiovascular risk reduction. In particular, the importance of lipid-lowering therapy should be emphasized as a key component of both cardioprotection and nephroprotection, in line with the Polish interdisciplinary expert statement on the management of multi-bed atherosclerotic disease.[39]

In advanced stages of CKD, implementing shared decision-making requires comprehensive communication about all available treatment options. At this stage, education should offer comprehensive information on each modality—including hemodialysis, PD, and kidney transplantation—taking into account various timing scenarios, as well as on the option of conservative management. Particular emphasis should be placed on promoting the "PD-favored" approach, which supports the preferential use of PD because of its survival advantage in the early years of dialysis and its positive impact on quality of life. Patients should be informed about the different PD modalities available, including automated PD, continuous ambulatory PD, and assisted PD, which is recommended for individuals unable to perform exchanges independently. Within patient education, kidney transplantation should be presented in a balanced manner alongside dialysis modalities. Patients should be informed about the key advantages of transplantation, including improved survival and quality of life, and the possibility of avoiding long-term dialysis, while also being informed of its limitations and contraindications. Expanding on both the benefits and disadvantages of transplantation supports a more comprehensive and balanced comparison across all renal replacement therapy options. Participation in formal educational programs significantly increases patients' likelihood of selecting PD as their RRT modality and enhances their readiness to begin treatment.[40] The availability of national guidelines for educating patients with advanced kidney disease also significantly influences the uptake of home dialysis, including PD. In countries with such guidelines, home dialysis is chosen more than twice as often as in countries without them.[41] This finding underscores the need to implement coordinated educational programs as an integral part of comprehensive CKD care.

Patients should be presented with not only the advantages and disadvantages of each treatment modality, but also information about the frequency of dialysis and the consequences of adherence or nonadherence to prescribed regimens. It is equally important to discuss prognosis and the potential to transition between treatment options, thereby enabling patients to make fully informed decisions about their care. Educational discussions should also address the impact of therapy on everyday life, covering employment, family responsibilities, physical activity, sexual health, and family planning.[13,34,37,38] Equally important are practical considerations, such as financial challenges related to reduced work capacity, insurance coverage, and treatment costs; transportation to dialysis centers; and access to patient support groups.[31]

Recommendation 7

Formats for Implementing Educational Programs

- Educational programs for patients with CKD should be formalized and delivered in a systematic manner.
- Basic education is recommended through consultations with primary care physicians and nurses, as well as nationwide webinars.
- General specialized education should be offered as publicly funded educational consultations, which, depending on local resources, may be conducted by a nephrologist, nurse, or a medical educator trained in kidney disease and can also include group meetings and topic-specific webinars.
- Detailed specialized education targeting patients with CKD stages G4–G5, which covers RRT options, should include simulation-based training.
- Educational programs should be delivered in small groups of patients at similar stages of disease progression.
- Active learning methods, such as group discussions, case studies, and simulations, are strongly encouraged.
- The use of digital tools (eg, mobile apps, online platforms) is particularly valuable for patients with limited access to care centers.
- Quizzes and tests should support knowledge reinforcement and retention.

[expert opinion]

Commentary

Health literacy is defined as the ability to access, understand, and use health-related information. Accordingly, educational programs should accommodate varying levels of health literacy and tailor the delivery of content to meet the individual needs of each patient.[42] Information should be presented clearly and simply, using non-technical language and tailored to the patient's cognitive abilities.[9,13] Research shows that structured, patient-centered education, particularly when adapted to an individual's cultural context, is significantly more effective than generalized teaching approaches.[43] Optimal outcomes can also be achieved through one-on-one education, delivered in a patient–educator format, when feasible. Ideally, the entire educational process should be led by the same individual to ensure continuity of care and consistency in messaging.[44] Moreover, programs that incorporate active learning methods and directly address patients' needs and concerns are more effective in fostering deep understanding and knowledge retention.[9] Technology can play an important supportive role in personalized education. Comparative studies have found that both online group sessions and in-person education effectively improve patients' ability to make informed decisions regarding RRT.[45] Globally, mobile applications are also being developed to assist patients in managing their health and making treatment decisions; however, further research is needed to evaluate their effectiveness.[46]

According to the World Health Organization's guide on therapeutic patient education, the concept of shared decision-making can be implemented through three key stages:[9]

1. An initial conversation, during which the educator helps the patient identify their goals and provides appropriate informational support;
2. A discussion of available therapeutic options, which includes reviewing all alternatives and outlining the risks associated with each option;
3. A decision-making conversation, in which the educator assists the patient in clarifying their needs and preferences and supports them in making an informed choice.

It is important to monitor educational outcomes across several key domains. The first domain involves assessing the learning process—specifically, whether the patient can independently comprehend and recall the information provided. The second focuses on evaluating the patient's skills and behaviors, with an emphasis on verification of practical competencies. A third critical area involves assessing the impact of education on clinical outcomes, such as symptom control, quality of life, body weight optimization, adherence to treatment, laboratory results, reduction in blood pressure and the frequency of hospital readmissions. Therefore, the educational process should be monitored at different stages, for example, through short theoretical and/or practical assessments administered after introducing new content.[9]

Recommendation 8

Educational Materials

- A variety of communication methods—verbal, written, visual, and multimedia—should be used to better align with patients' individual needs and preferences.
- Educational materials should be obtained from reliable sources, such as patient-centered websites, resources provided by medical device and pharmaceutical companies, publications from scientific societies and patient advocacy organizations, and peer-reviewed content from reputable professional journals.

[expert opinion]

Commentary

The effectiveness of patient education depends mainly on the quality and accessibility of the materials used.[10] Studies have shown that a multimodal approach—integrating multiple teaching strategies—enhances knowledge retention. For example, verbal explanations should be supplemented with simple written materials to reinforce comprehension and recall.[9]

Regardless of the format, educational content must align with the patient's health literacy level and their ability to understand medical information. A systematic review assessing the readability of CKD-related educational materials, including online resources, found that the language used is often too complex for the target audience. Similarly, only a small number of mobile applications developed for patients with CKD have been rated highly by users.[47] These findings underscore the need to use clear, straightforward language, avoid medical jargon, and adapt materials to individual patient in order to improve the effectiveness of education and encourage active participation in care.[48] Moreover, patients with visual impairments may benefit from audio-recorded materials, which can support knowledge acquisition and learning.[9]

Recommendation 9

Training of Educational Teams

- Team members responsible for patient education should receive training in both CKD-specific clinical knowledge and communication skills.
- Specialized support should be provided by centers involved in educational programs.
- Essential components of team preparation include training in soft skills such as effective communication, motivational techniques, and the ability to tailor information to individual patient needs.

[expert opinion]

Commentary

A key component of effective patient education is the appropriate training of individuals delivering the educational programs. Educators should be trained not only in medical education but also in motivating patients and presenting information in an unbiased manner. They should also be skilful at adapting educational content to the disease stage and be able to support shared decision-making.[31,37] Educators should demonstrate strong communication competencies as well as the ability to manage their own emotions and those of the patients—an essential factor in helping patients adjust to chronic illness.[10] Findings from a qualitative study involving healthcare personnel and patients underscore the need for comprehensive training of the entire team, regardless of individual roles. This inclusive approach promotes consistency and objectivity in the educational process, enhancing collaboration among team members.[9,49] A study of primary care physicians in Poland revealed notable gaps in knowledge regarding CKD, further underscoring the need not only for patient-centered education but also for targeted educational initiatives among healthcare professionals.[50] Moreover, theoretical knowledge of the disease and treatment options may be insufficient for effective education. It is therefore important that educational team members also have practical experience. For example, French guidelines suggest that each member of the educational team should complete at least 40 hours of theoretical and practical training in therapeutic patient education.[51]

Recommendation 10

Quality Control and Evaluation of Educational Effectiveness

- Systematic audits should be implemented, covering both program-level indicators (eg, number of patients educated, treatment modality choices, the number of patients undergoing pre-emptive transplantation, the number of patients initiating dialysis with a planned vascular access, and participant satisfaction) and individual patient outcomes (eg, clinical parameters, hospitalization rates, quality of life).

[expert opinion]

Commentary

Regular quality control is a key factor in maintaining high standards of care delivery.[9,52] The effectiveness of an educational program can be evaluated from both institutional and patient perspectives. From the institutional standpoint, key indicators include the facility's increasing capacity to run its own patient education program and its potential role as a model for other centers. From the patient's perspective, educational effectiveness is reflected in informed treatment choices, improved adherence to therapeutic recommendations, and ultimately, better clinical outcomes and quality of life.[10]

Program evaluation may also involve questionnaires and semi-structured interviews with patients and the nurses conducting the training. Assessments performed before and after the educational intervention enable evaluation of the acceptability and practical utility of individual educational modules.[48,53]

Conclusion and Action Plan

The need to educate patients with CKD and their families is well established. However, it is equally important to ensure that the personnel delivering education are adequately trained. Given the scale of the problem, developing and implementing a structured educational program is a major challenge. Nevertheless, this challenge is warranted not only by clinical imperatives to strengthen patient knowledge but also by legal and systemic obligations. For example, the Act of 2017, October 27, on Primary Healthcare states that one of the objectives of primary care is "to provide education to beneficiaries regarding responsibility for their own health and the development of health awareness".[54] In practice, the implementation of this objective is hindered by the absence of standardized educational programs and the limited availability of human and financial resources within primary care settings. According to data from the National Health Fund (Narodowy Fundusz Zdrowia [NFZ]) - the public institution responsible for financing and reimbursing healthcare services within the Polish healthcare system - although health education is formally included in the responsibilities of medical staff, its delivery varies widely, which is largely attributable to the lack of unified guidelines and the failure of the NFZ to define the specific educational content to be offered to patients.[55] The importance of educational initiatives was also emphasized in the Annexe to Resolution No. 196/2021 of the Council of Ministers (dated December 27, 2021) on the development of the Polish healthcare system in the coming years.[56] This document identifies key challenges within the national healthcare system. While it underscores the importance of enhancing preventive and educational efforts, it lacks specific implementation mechanisms. As a result, coherent, standardized guidelines for clinical practice are lacking.

Given these limitations, the development of detailed educational programs should be considered an urgent priority within the Polish healthcare system—particularly for patients with CKD, where structured education can play a decisive role in influencing disease progression, treatment adherence, and readiness for RRT. Effective educational interventions may help slow disease progression and delay the initiation of burdensome and costly renal replacement modalities. In advanced CKD, education can improve patient access to preferred treatment options, such as preemptive kidney transplantation and home-based PD. The initial step in program implementation should involve gathering and analyzing data from centers with prior experience in educational initiatives. Their insights should inform the development of a standardized educational algorithm. This algorithm may consist of multiple model training programs adapted to the size and resources of individual healthcare centers. Each program should define the core content to be delivered, the appropriate delivery methods, and the necessary qualifications for educators. The program should be designed to be precise, feasible, and mandatory for all CKD patients who consent to participate. The process of designing educational stages should involve not only nephrologists, but also primary care physicians, nephrology nurses, physiotherapists, dietitians, psychologists, and other professionals engaged in program delivery.

Next, formal endorsement of the CKD education program should be obtained from the national nephrology community and the National Consultant in Nephrology. Subsequently, the cost of implementing patient education should be estimated using the developed algorithms, and a funding request should be submitted to the payer. Securing the support of healthcare policymakers is critical, as patient education may become a central component of the national CKD strategy. This support is particularly important in light of evidence from large-scale initiatives, which indicates that the most successful education programs are endorsed by political systems, thereby enhancing public acceptance and facilitates funding and reimbursement within the healthcare system; provide comprehensive training for healthcare professionals, and focus on structured patient education aimed at fostering self-management, while remaining adaptable to the overall disease course as well as local, cultural, and individual differences.[51]

When designing an implementation model for CKD educational programs, healthcare decision-makers and providers should consider factors such as accessibility, cost, and available human resources. Among these, the availability of qualified personnel emerges as a critical factor influencing the structure and organization of training.[9]

The final phase of this initiative should involve distributing and broadly disseminating the developed educational guidelines.

Abbreviations

CKD, chronic kidney disease; ESKD, end-stage kidney disease; PD, peritoneal dialysis; RRT, renal replacement therapy.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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