Review Article

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Teenage Risk Behaviours with Chronic Kidney Disease: A Midwest Paediatric Nephrology Consortium Study

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Abstract

Objective: To compare and contrast the therapy of paediatric Granulomatosis with Polyangiitis (GPA) between paediatric rheumatologists and nephrologists.

Methods: The Midwest Paediatric Nephrology Consortium Group (MWPNC) and a global email listserv for paediatric rheumatology received a voluntary survey in 2016–2017. Three clinical scenarios (A–C) were used to collect data on general practise traits and preferences for induction management: newly diagnosed GPA with glomerulonephritis, GPA with quickly progressing glomerulonephritis, and GPA with pulmonary haemorrhage. Additionally, preferences for GPA maintenance drugs, disease monitoring, and therapy of GPA with end-stage renal illness were identified.

Results: The MWPNC membership responded at a rate of 68%, and the number of rheumatologist respondents was equal. According to survey findings, rheumatologists prefer Rituximab with Cyclophosphamide over nephrologists for induction in Scenarios A and B, while nephrologists choose Cyclophosphamide in Scenario A. Although low overall, Plasmapheresis rates increased for Scenarios A, B, and C for both disciplines, regarding the length of either the diagnosis process or maintenance therapy, there was no apparent agreement. Compared to nephrologists, rheumatologists more usually choose Rituximab for maintenance and induction. Additionally, the use of Mycophenolate Mofetil was higher than anticipated for both specialties.

Conclusion: This study has identified significant disparities in how rheumatologists and nephrologists treat this condition. It emphasises the necessity of carefully planned clinical trials in paediatric GPA patients and makes clear that both specialities must be represented during efforts to reach consensus and plan clinical studies.

Keywords: Nephrology • Chronic kidney disease • Paediatric nephrology• Risk assessment • Rheumatology

Introduction

Risky behaviours among adolescents and adults in the United States (US) significantly contribute to the primary causes of illness, mortality, and social issues. Any action that jeopardises a person's ability to successfully develop their psychosocial components of adolescence is considered risk behaviour. Unprotected sexual contact, drug and alcohol abuse, poor eating habits, insufficient physical activity, and actions that lead to unintentional harm and violence are a few examples of risky behaviours.

Adolescence can be more difficult when a chronic illness is present, and it can also affect how risky behaviours are engaged in and handled. For example, patients with end-stage renal disease (ESRD) can require hemodialysis three or more times per week, which could have a major effect on academic development, socialisation, and self-esteem. These difficulties might push people to take on dangerous endeavours in an effort to gain both peer acceptability and a sense of personal independence. However, contrary findings emerged from other investigations. Teen cancer survivors have lower lifetime substance use prevalence than the general US population, Additionally, Valencia and Cromer reported lower prevalence of

substance use in their study of chronically unwell teenagers with cystic fibrosis, myelomeningocele, haemophilia, and HIV [1].

They argued that perhaps the medical conditions of teenagers with those specific chronic illnesses prevented them from indulging in substance use. Studies on small and carefully chosen sample sizes and studies evaluating certain risk behaviours have offered valuable but limited insights into risk behaviours in young people with CKD. Because they lack a thorough awareness of the incidence and severity of risk behaviours, nephrologists, particularly those who care with teenagers and young adults, may not have offered routine risk behaviour counselling. In order to determine the prevalence of risk behaviours in a sizable population of teenagers with CKD, we created the Assessment of Risk Behaviour in Teens with Chronic Kidney Disease (ASK KIDD) study. We identified relationships with patient characteristics by comparing their data with a frequency-matched sample obtained from the National 2015 Youth Risk Behaviour Survey (YRBS).

Included in the descriptive statistics were frequencies, the percentage of no missing data, and the age mean and SD. As a control sample, information from the 2015 YRBS National High School data collection was used. Eight strata were created after categorising adolescents in both data sets by age (13–15 vs. 16–19 years), gender, and race (white vs. non-white). The number of teenagers who fit into each of the categories was then calculated using the ASK KIDD and YRBS samples. In order to get the largest sample size from the YRBS data set, all participants in one stratum were chosen, and then random selection was used to draw proportions from the remaining 7 strata that matched those in the ASK KIDD sample (Supplement 2). In the national data set of 15,294 adolescents, 8530 could be used as the comparison group. Using the proportions from the control sample as the hypothesised population proportions, one-sample chi-square tests were used to compare the proportions of risky behaviours between the ASK KIDD sample and the control sample. The frequency distribution for the age in 1-year intervals, with 11 and 17 years utilised for the lower interval of 11 years and upper interval of 17 years, was used to estimate the age of first sexual contact. The intervals for the frequency distributions for the ages at which people first consume alcohol and smoke marijuana were 8 years, 9 years, 11 years, 12 years, 13 years, 15 years, and 17 years. The midpoints of the 2-year intervals and the lower and upper limits of age, 8 and 17, were used to estimate mean ages. The calculated mean ages' approximate normal distribution was confirmed, and one-sample t tests were applied to compare the results to the control sample [2].

Multiple logistic regression analysis was conducted with all of the aforementioned demographic variables included in the models to examine differences in high risk behaviours and attitudes towards high risk behaviours only unadjusted odds ratios (95% CI) were calculated for some high-risk behaviour because fewer than 20 teenagers engaged in the behaviour, which led to unstable estimates. Teens with one high-risk behaviour vs those with two or more on behaviours related to depression and suicide were compared using chi-square testing. Due to the limited sample sizes within these groups, Fisher's exact tests were employed to assess high-risk behaviours between dialysis groups, years on dialysis, and years with a kidney transplant. The four questions about perceived risk of harm were dichotomized into no/slight danger and moderate/great risk, and the results were compared across age groups, genders, and races using chi-square tests.

Due to some individuals' missing data, sample sizes for the variables under study differed. Missing responses in the YRBS data set are due to skipped questions or illogical/invalid answers. No multiple imputation techniques were used since the missing data could not be classified as to type. Version 24 of IBM's SPSS Statistics for Windows (IBM Corp., Armonk, NY) was used for all analyses [3].

Discussion

Any behaviour that can jeopardise the psychosocial facets of adolescent development is referred to as risk behaviour. The goal of the ASK KIDD study was to gather detailed information on risk behaviours among US-based teenagers with CKD (CKD II–V and kidney transplant patients). The study's strengths are its huge sample size drawn from 15 geographically dispersed centres and the anonymity of the responses. As a result, the findings are representative of the teenage CKD population in the US. About 34% of the

cohort's members appeared to be transplant patients, which seemed excessive. Less lifetime exposure to illegal drugs or nonprescribed prescription medications was found in secondary analysis comparing transplant patients with nontransplant individuals, but the transplant group experienced considerably greater rates of being offered, given, or sold illegal substances. This may be explained by the fact that the transplant group frequently comprises a portion of all severe CKD patients, including those receiving dialysis, who have been screened for family support and medical adherence. They are likely "more resistant" to receiving illegal drugs even when provided because of these traits, which are known to play a "protective" function against risky behaviours. On all other examined risk behaviours, there were no discernible changes between the transplant group and the non-transplant group [4].

In comparison to peers of similar age, gender, and race, the CKD cohort showed significantly lower prevalence of risk behaviours in each of the five evaluated domains: driving safety-related behaviours, sexual behaviours, substance and alcohol use, bullying and disputes, and depression and suicidal behaviours. Contrary to popular belief, chronic disease load does not increase the likelihood of psychiatric symptoms and suicidal behaviours in teenagers. In fact, some have hypothesised that children with chronic conditions exhibit fewer risky behaviours. Additionally, when connecting self-reported depressed symptoms with medication load or CKD category our data did not reveal any differences [5].

This is in line with other research' conclusions that, unlike in adults, disease load in children is not associated with depressed symptoms. According to the findings of our study, women had a higher probability of experiencing depression and making an attempt at suicide. Other findings concerning depression did not entirely accord with psychiatric evaluations made by medical professionals in dialysis and predialysis patients. There is no correlation between the variety of psychiatric problems and sex, the seriousness of anaemia, or the length of hemodialysis. Similar findings of a lack of connection between depressive symptoms and age, time, type of hemodialysis, or education. The lack of standardised testing for depression in ASK KIDD subjects could be one explanation for the disparities. Recall bias could have resulted from subjects failing to recognise depression or accurately recalling risky behaviours. Second, our study was larger and included participants with CKD stages 2 to 5, not just those receiving dialysis. Future research must address the issue that the ASK KIDD study presents on how risk behaviours, such as depression, should be screened for in this patient population. However, ASK KIDD offers a distinctive perspective on self-reported risk behaviour and depression symptoms from the teen's point of view.

Contrary to our findings, numerous researchers have found that kids with chronic illnesses or disabilities are more likely to experience bullying. We posit that some untapped data could account for these results. First off, bullying may be less likely to affect teenagers with CKD who lack a visible physical handicap compared to those who have, aside from being shorter in height [6].

Our results shouldn't be taken to imply that young people with CKD are well shielded from risky behaviour. It is concerning that 28% to 50% of CKD subjects did not think that using nicotine, alcohol, marijuana, or non-prescribed prescription drugs would result in more than minor harm to their health. These substances can speed up the progression of CKD. Participants who were non-white expressed less anxiety about drug-related risk. This emphasises how crucial it is to talk to and teach youth about safe behaviours that should take place concurrently with medical management, especially in non-white communities. Despite the fact that youth with CKD may exhibit fewer risky behaviours overall, particular subgroups—namely, those who use various substances—have remarkably greater cumulative incidences of depression and suicidal behaviours. When compared to those who only used one substance, the incidences of self-reported depression and suicide ideation or attempt were 2-3 times greater [7].

The CKD group reported much less instances of feeling depressed, making suicidal plans, and attempting suicide than their peers, according to data. After the suicide attempts, a greater percentage of the CKD group needed medical care. These results imply that adolescents with CKD may experience more severe repercussions for risky behaviours than do adolescents without the disease.

Their comorbidities and hazards associated with healthcare may help to explain this. For instance, it has been noted that, after smoking, alcohol consumption is the second most prevalent high-risk behaviour among chronically unwell teenagers. In the US, drinking alcohol of any kind before the legal drinking age of 21 is prohibited [8].

In comparison to their peers, the CKD group reported significantly fewer incidences of experiencing depression, making suicidal plans, and actually attempting suicide. Following the suicide attempts, a higher proportion of the CKD group required medical attention. These findings suggest that risky behaviours may have more severe consequences for teenagers with CKD than for those without the condition. Their medical conditions and potential risks may assist to explain this. For instance, it has been found that among youths who are chronically ill, drinking alcohol is the second most common high-risk practise, right behind smoking. Before the legal drinking age of 21 in the US, no alcohol of any type may be consumed [9].

Both temporarily and permanently, drinking alcohol is linked to impairments in judgement and cognition. There is abundant evidence that alcohol consumption has harmful cognitive effects on the developing teen brain, that CKD is independently linked to cognitive impairment, and that certain prescription drugs may interact with alcohol and potentially other substances of abuse. Even though the ASK KIDD cohort had a low rate of binge drinking (2.3%), 8% of respondents said they had consumed alcohol in the previous 30 days, particularly older adolescents and people who took less than five drugs per day. This result was in line with research on teen drinking and chronic medical issues. Health professionals must therefore pay close attention to the short- and long-term effects on the wellbeing of adolescents with CKD who drink alcohol [10].

Conclusion

Despite these drawbacks, the data from this study can help researchers better understand the prevalence of risk behaviours and how they relate to patient characteristics. In conclusion, risk behaviours are prevalent in youth with CKD even if they are less frequent than in the general population. The possible repercussions of risky behaviour, however, could be severe in CKD patients with complex medical conditions. The first step in reducing these behaviours could be to have a conversation with the youngster about options other than just medical care, such as education about the possible harm that risky behaviour could do to their kidney health. The ultimate objective is to support youth with CKD in making a safe transition to adulthood and to enhance long-term outcomes.

Conflicts of Interest

None

Acknowledgment

None

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