ORIGINAL ARTICLE

Annals of Agricultural and Environmental Medicine
www.aaem.pl

Determinants of life situation, stress, coping resilience, and life satisfaction among parents of children with arrhythmia – a cross-sectional study

Ewelina Kolarczyk[1,A-D,F] ✉, Aleksandra Morka[2,B,E-F], Lesław Szydłowski[3,A-C,F], Jacek Kusa[4,B,E-F]

[1] *Department of Propaedeutics of Nursing, Faculty of Health Sciences, Medical University of Silesia, Katowice, Poland*
[2] *Jagiellonian University Collegium Medicum UJ, Department of Pediatric Cardiology, University Children's Hospital in Kraków, Poland*
[3] *Krakowska Clinic, Kraków, Poland*
[4] *Paediatric Cardiology Department, Faculty of Medical Sciences, Medical University of Silesia, Katowice, Poland*
A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of the article

Kolarczyk E, Morka A, Szydłowski L, Kusa J. Determinants of life situation, stress, coping resilience, and life satisfaction among parents of children with arrhythmia – a cross-sectional study. Ann Agric Environ Med. doi: 10.26444/aaem/202803

Abstract

Introduction and Objective. In some cases, there is a need to hospitalize a child for diagnosis and treatment of cardiac arrhythmias, resulting in expected changes in family functioning, often making it impossible to carry out the current family and professional plans of the child's parents/caregivers. The aim of the study was to examine the life situation of parents of children with cardiac arrhythmias in relation to the incidence of stress, the role of spirituality, life satisfaction, coping resilience, and to selected socio-demographic factors.

Materials and Method. The study included 101 parents of children with heart arhythm and conduction disorders who were diagnosed and treated at a Clinical Centre. The survey used the Life Situation Assessment Questionnaire for Parents, Satisfaction with Life Scale (SWLS), the Perceived Stress Scale (PSS) and the Brief Resilient Coping Scale.

Results. Analysis showed that the personal functioning of the parents was good (p=0.002), while the impact of spirituality on life functioning was medium (p=0.010). The level of general life situation, level of life satisfaction and level of perceived stress, were significantly high (p=0.001;p=0.001; p=0.004). More stress was felt by mothers than fathers (p=0.023) and parents with higher education (p=0.047), as well as those who practice religion (p=0.008). Parents who were in a relationship felt better life satisfaction (p=0.004), and the living situation of rural residents was statistically significantly better than urban residents (p=0.024).

Conclusions. Understanding the life situation and emotions of parents of children with cardiac arrhythmia will help health care providers offer sufficient support.

Key words

children, parents, arrhythmia, caregivers, conduction disorders

INTRODUCTION

Heart rhythm disorders are an important aspect of paediatric medicine. They are characterized by irregular heart activity in a child, which consists of a rhythm that is too fast (tachyarrhythmia) or too slow (bradyarrhythmia), skipping beats, or the presence of premature extra beats [1]. Arrhythmias can be temporary or permanent. Arrhythmias in children can be caused by a number of factors, such as cardiac malformations, infections, myocarditis, the effects of certain drugs, and mechanical damage to the heart as a result of injury or heart surgery. However, in many cases, the cause remains unknown [2]. Arrhythmias can also be congenital, in which case the baby is born with an abnormal heart rhythm. In newborns, tachyarrhythmias most often involve supraventricular recurrent tachycardia [3], atrial flutter, and sinus tachycardia, while permanent bradycardia can result from sinus node dysfunction, or complete heart block following active collagenosis in the mother [4].

✉ Address for correspondence: Ewelina Kolarczyk, Department of Propaedeutics of Nursing, Faculty of Health Sciences, Katowice, Poland
E-mail: ekolarczyk@sum.edu.pl

Received: 15.12.2024; accepted: 04.03.2025; first published: 24.03.2025

The clinical picture of cardiac arrhythmias in children differs depending on the type of arrhythmia. There may be chest pain [5], syncope, fatigue, weakness, dizziness, difficulty with eating, palpitations, dyspnea, irritability (especially in children who cannot communicate or identify other symptoms), and in rare cases sudden cardiac death may occur [6]. Sudden arrhythmic death syndrome is a rare pathological condition in young people, but the underlying mechanisms are complex and poorly understood [7, 8].

Benign arrhythmias are usually asymptomatic or sparse, do not escalate and do not cause haemodynamic disturbances in the future [9]. These include tachyarrhythmias, bradyarrhythmias, supraventricular, and ventricular arrhythmias. Supraventricular arrhythmias are characterized by single extra beats and are common in newborns. The presence of supraventricular arrhythmias in children in the postnatal period requires further diagnostic work to exclude congenital heart disease, cardiomyopathy, and to assess complex forms of arrhythmias. Mild forms of ventricular arrhythmia include accessory beats of the postictal ventricular, accelerated ventricular rhythm, and idioventricular rhythm with a frequency of ventricular close to the baseline rhythm [3, 6, 9, 10].

In about 65% of children and adolescents, ventricular arrhythmias have an idiopathic, asymptomatic origin with the possibility of spontaneous resolution [10]. Other high-risk causes of ventricular arrhythmias include prolonged QT syndrome [11], catecholaminergic polymorphic ventricular tachycardia [12] and hypertrophic cardiomyopathy [13], cardiac tumour, and some congenital heart disease [14]. Depending on the type of arrhythmia, the diagnosis includes medical examination, resting electrocardiography, exercise electrocardiography, monitored Holter ECG recording, and other methods, such as echocardiography, chest radiography, or cardiac MRI [15]. Treatment of arrhythmias includes pharmacotherapy, ablation [16] and implantation of a pacemaker or defibrillator, depending on the type of arrhythmia and symptoms present [17].

A child's illness regarding his/her cardiac problems can significantly affect the psyche of parents and loved ones, as they often feel increased stress and emotional burden. An example of this are the studies conducted by Zhang et al., in which specific stress factors in families of children with congenital heart disease were identified, such as: hardships encountered during treatment, the heavy financial burden, the unusual growth track of the child due to the disease, normal events becoming abnormal for the family, impaired family functioning, family vulnerability, family resilience, family boundary ambiguity induced by role alteration, a lack of knowledge about community support, and family stigma [18]. According to the literature, about 81% of caregivers experience a significant burden of caring for or providing care for a family member with illness, in which praying is the main strategy for coping with this burden [19]. The higher emotional burden on parents who are caregivers of children with chronic illnesses is due to the significant emotional bond with the patient family member, as well as the emotional and material support offered when providing comprehensive care to the child with the illness [20], and is associated with lower life satisfaction [21]. The burden of care for parents of children with cardiac diseases depends on the number of symptoms of the disease occurring in the children, and the greater the number of complaints in diseased children, the lower the quality of life in parents [22]. The burden of caring for an ill child is the cause of depression, anxiety and stress in caring parents, and the use of religious coping strategies can help reduce the burden of care and support the well-being of caregivers [23].

Health care for a child with cardiac arrhythmias also requires attention to the physical and psychological needs of the child's parents. Although not all cardiac arrhythmias directly threaten a child's health and life, the mere knowledge that they can cause sudden death creates chronic anxiety among children's parents about the health and life of their child. A study by Allam et al. showed that the parents of children who had permanent pacemakers fitted had a low quality of life [24]. In the field of paediatric cardiology, research to date has mainly focused on the living situation of parents/caregivers of children with congenital heart disease [25]. There is a lack of research on the impact of other paediatric cardiological issues and diseases on the situation of parents/caregivers, including parents of children with heart rhythm disorders. Additionally, there is a gap in studies concerning the socio-demographic factors of caregivers – the parents of children with heart rhythm disorders.

According to the literature, the socio-demographic characteristics of caregivers place them in a risk group, making them vulnerable to threats, as they function in an adverse situation such as having a child with illness [26]. Current studies have shown that socio-economic factors related to low family income and low education levels, led to limited access to and less frequent use of health and specialized services [27], and resulted in less family-centreed care, later receipt of diagnosis, and receipt of lower-quality care [27, 28]. Knowledge of socio-demographic and emotional factors can help medical personnel in paediatric wards identify risk factors for the poor psychological adjustment of parents/caregivers to their children's illnesses [29].

The aim of the study was to examine the living situation of parents of children with cardiac arrhythmias in relation to the occurrence of stress, the role of spirituality, life satisfaction, coping resilience, and socio-demographic factors.

MATERIALS AND METHOD

A cross-sectional, single-center study was carried out according to the STROBE checklist for observational studies [30]. The study was conducted among 101 parents of children hospitalized for cardiac arrhythmias at the Upper Silesian Children's Health Centre, Clinic of Paediatric Cardiology in Katowice, Poland. The average age of the respondents was 39.14±6.36 years. Inclusion criteria for the study were that they should be parents/legal caregivers of children with idiopathic cardiac arrhythmias, written parental consent to participate in the study, and fluency in spoken and written Polish. Exclusion criteria: parents of children with secondary (post-surgical) arrhythmias and cardiovascular dysfunction, heart disease, cardiomyopathies, heart tumours, chronic illness of a child with a severe course of another child in the family, and functioning of the child at the level of disability of mild, moderate and severe type.

All respondents participating in the study were accommodated 24 hours a day with a hospitalized child in a Paediatric Cardiology Clinic. The surveys were collected during the hospitalization of parents accompanying children with arrhythmia, excluding the day of admission to the ward and the day of discharge from the hospital, and distributed in paper form from March 2022 – June 2024. The average hospitalization time for the children of the surveyed parents was 3 days. The study included parents whose children (n=94) with cardiac rhyme abnormalities had an average age of 10.43±5.18 years, and the average age at which the first symptoms of arrhythmia appeared was 8.18±5.19 years. Of the 150 questionnaires, 35 were not returned, 3 questionnaires were returned uncompleted, and 11 were not included in the study due to not meeting the inclusion criterion. Six parents refused to participate in the survey.

Instruments. The research was carried out using the following standardized measures: the Life Situations of Caregivers/Parents of Children with CHD and/or Other Cardiac Diseases Questionnaire, Satisfaction with Life Scale, Perceived Stress Scale, and the Brief Stress Coping Scale. An original survey on the socio-demographic characteristics of parents and clinical factors of children with CHD was also used.

The Life Situations of Caregivers/Parents of Children with CHD and/or Other Cardiac Diseases (OCD)questionnaire is a reliable and homogeneous tool for measuring the functioning of parents in the event of a child's illness. For the personal sphere, a Cronbach's α value of 0.72 was obtained; for the spiritual sphere, a Cronbach's α of 0.83 was obtained; and for both sections, a Cronbach's α of 0.66 was obtained. Its results will be presented using 3 scales: personal life functioning (score range 6–30, with scores up to 10 indicating low, 11–20 medium, and 21–30 high); the impact of spirituality on life functioning (score range 4–20, with scores up to 9 indicating low, 10–14 medium, and 15–20 high), and general life situation (score range 10–50, with scores up to 24 indicating low, 25–32 medium, and 33–50 high) [31].

The Polish version of the Satisfaction With Life Scale (SWLS), translated by Juczyński, was used; the original scale was developed by E. Diener, R. A. Emmons, R. J. Larson, and S. Griffin. Scores range from 5–35, and the higher the score, the greater the satisfaction with life. Scores are converted to a 10-point sten scale and further divided into low (1–4 sten), medium (5–6 sten) and high (7–10 sten). Life satisfaction, as assessed by the SWLS, is expressed as a sense of satisfaction with one's achievements and conditions, and the Cronbach's alpha reliability index is α=0.81 [32].

The Polish version of the Perceived Stress Scale (PSS),translated by Juczyński and Oginska-Bulik, was used to assess the intensity of stress related to the life situation over the past month; the original scale was developed by S. Cehen, T. Kamarck and R. Mermelstein. The reliability index of the PSS-10 scale, the Cronbach's alpha, is α=0.82. Scores on this scale range from 0–40 points, with higher scores indicating a greater intensity of perceived stress. A breakdown was adopted, with scores up to 16 indicating a low level of stress, scores of 17–22 indicating a medium level of stress, and scores of 23–40 indicating a high level of stress [33].

The Brief Resilience Coping Scale created by Vaughen G. Sinclair and Kenneth A. Wallston was validated and translated into Polish by Piórkowska et al. The scale is used to measure resilience understood in process terms in a group of adults. The scale consists of 4 items to which participants must respond to a 5-point scale; the reliability of the method was estimated using Cronbach's alpha coefficient (α=0.625), which in this case can be considered satisfactory. The score of this scale ranges from 4–20 points, and the higher the score, the greater the resilience in coping with stress. The results of the study also show that the present scale can be useful for identifying people who need support in developing resilience [34].

Statistical analyses. The statistical analysis was performed by company specializing in statistical calculations in the fields of medicine, psychology, pedagogy, sociology, and other scientific fields. The analysis used a significance level of $p<0.05$. The variable expressed at the ordinal level was analyzed using the one-sample test, which calculates a chi-square statistic based on the differences between the empirical and expected frequencies of the variable's categories. A parametric test (Student's t-test) or its non-parametric counterpart (Mann-Whitney U-test) were used to analyze quantitative variables presented by group. The choice of tests was made on the basis of the distribution of variables, verified by the Shapiro-Wilk test. Calculations were performed in the statistical environment of R ver.3.6.0, PSPP programme and MS Office 2019.

Ethical procedure. The study was conducted under the recommendations of the Helsinki Declaration elaborated by the World Medical Association [35], and the guidelines of Good Clinical Practice [36]. Before beginning the study, the respondents were informed that it was anonymous and voluntary. Before beginning the study, the respondents were informed that it was anonymous and voluntary. Consent to participate in the study was obtained from each respondent. The study protocol was approved by the Bioethics Committee at the Medical University of Silesia in Katowice (Approval No. BNW/NWN/0052/KB/44/I/22/23).

RESULTS

Characteristicts of the study group. The study included 87 (86.1%) mothers and 14(13.9%) fathers. The respondents were overwhelmingly (79;80.6%) married, and more than half of the respondents were economically active, employed full-time (68;70.1%). Nearly half (44;46.8%) of the respondents had a university degree. The vast majority of respondents were Roman Catholic (75;83.3%), and nearly half of the parents surveyed were believers and non-practicing (37;40.2%). Half of the respondents (55;59.1%) believed that the child's illness occurred by chance, 32 (34.4%) believe its cause was genetic, and only 1 person (1.1%) believed it was a punishment for sins. The emotions that accompany parents of children with heart disorders in connection with their child's illness are mainly fear (83;83.0%), sadness (45;45.0%) and love (23;23.0%), and one parent felt shame (1.0%). Respondents indicated that the mother (95;96.0%) and the child's father (44;44.4%) predominantly take care of the child with illness, and more than half of the parents surveyed have other children besides the child with a heart disorder (67;69.8%). A non-parametric T-test for independent variables showed that among those with more than one child, the severity of stress averaged 19.28±7.25, while among those with only one child, the average was lower – 17.79±6.63. The differences indicated are not statistically significant differences ($p >0.05$). This means that having more than one child did not significantly differentiate the severity of stress experienced by parents. Detailed information on the parents of a child with a heart disorder is provided in Table 1.

Results of standardized questionnaires. Analysis by chi-square test ($\chi 2$) showed that the level of personal functioning was statistically significant ($p=0.002$), most often was high (65.3%), the significance of the influence of level of spirituality on functioning, most often was medium (45.3%; $p=0.010$), and the level of general life situation (64.4%; $p=0.001$), life satisfaction (52.6%; $p=0.001$) and stress (49.0%; $p=0.004$) significantly most often were high. In terms of coping resilience, the result was not statistically significant ($p=0.254$).

Gender as a differentiating factor in life situation, life satisfaction, stress level and coping resilience of parents of children with cardiac arrhythmias. Use of the non-parametric Mann-Whitney U-test showed that women felt statistically significantly ($p=0.023$) more stress than men in connection with their child's illness. Among women, the severity of stress averaged 19.59±7.02, while among men the average was lower, at 14.85±5.66 (Fig. 1). The study found no

Table I. Characteristics of the participants (n=101)

Parameter	Group	N	%
Age [years]	≤ 35	26	26.50%
	36 – 40	31	31.60%
	≥40	41	41.80%
Gender	female	87	86.10%
	male	14	13.90%
Marital status	single	2	2.00%
	married	79	80.60%
	widower	0	0%
	divorced	11	11.20%
	a partnership	6	6.10%
Education level	lack	0	0%
	primary	1	1.10%
	Junior high school	3	3.20%
	vocational	10	10.60%
	secondary	36	38.30%
	higher	44	46.80%
Place of residence [residents]	village	25	27.20%
	city ≤24 999	15	16.30%
	city 25 000 - 49 999	16	17.40%
	city 50 000 - 100 000	20	21.70%
	city > 100 000	16	17.40%
Professional activity	employed on full time	68	70.10%
	employed on part-time	6	6.20%
	self business	7	7.20%
	pensioner	1	1.00%
	unemployment	15	15.50%
The cause of unemployment	lost the job	3	18.80%
	quit the job because she/he wanted to	5	31.30%
	forced her to do so	7	43.80%
	takes a job for the first time	0	0%
	returns to work after a long time	1	6.30%
Religion	lack	10	11.10%
	roman catholic	75	83.30%
	greek catholic	1	1.10%
	orthodox	1	1.10%
	other	3	3.30%
Religious practice	believer and practicing regularly	22	23.90%
	believer and no practicing	37	40.20%
	nonbeliever and no practicing	6	6.50%
	believer and practicing irregularly	26	28.30%
	nonbeliever and practicing	1	1.10%
Emotions related to a child's illness	anger	11	11.00%
	sadnes	45	45.00%
	anxiety	83	83.00%
	satisfaction	2	2.00%
	love	23	23.00%
	surprise	10	10.00%
	hate	0	0%
	shame	1	1.00%
	none of the above	4	4.00%
	hard to say	4	4.00%
	other	0	0%
The main caregiver of sick child	child's mother	95	96.00%
	father of the child	44	44.40%
	grandparents	7	7.10%
	child's siblings	2	2.00%
	other person	2	2.00%
The cause of the child's illness	coincidence	55	59.10%
	inheritance of the disease	32	34.40%
	punishment for sins	1	1.10%
	my negligence	2	2.20%
	negligence of third parties	3	3.20%
Having other children	yes	67	69.80%
	no	29	30.20%
Well-being	good	44	43.60%
	fairly good	28	27.70%
	as neither good nor bad	21	20.80%
	rather bad	7	6.90%
	bad	1	1.00%
Financial situation	very satisfactory	5	5.10%
	quite satisfactory	67	67.70%
	neither satisfactory nor unsatisfactory	22	22.20%
	rather unsatisfactory	4	4.00%
	unsatisfactory	1	1.00%

statistically significant differences (p>0.05) between men and women on the other scales. Mothers functioned slightly worse in their personal lives, the impact of spirituality on functioning was greater in them, and their living situation was worse compared to men. In contrast, life satisfaction was slightly higher among men, as was coping resilience.

Life situation, life satisfaction, stress level and coping resilience of parents in relation to education. Parents with higher education felt statistically significantly more stress (p=0.047). There were no statistically significant differences between the groups in the assessment of the life situation and its dimensions, life satisfaction and coping resilience (p>0.05). Those with higher education were characterized by slightly

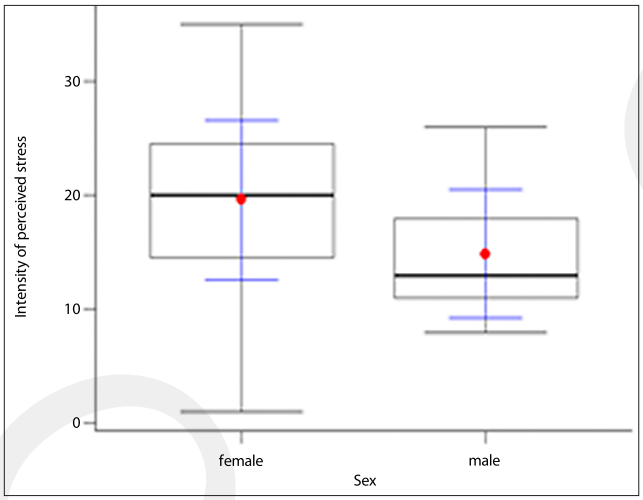

Figure 1. Stress levels according to gender of parents of children with heart rhythm disorders

worse personal functioning (p=0.764), a slightly greater impact of spirituality on personal functioning (p=0.790), and a slightly better overall life situation (p=0.858), in addition to lower life satisfaction (p=0.536) and greater coping resilience (p=0.933).

Life situation, life satisfaction, stress level and coping resilience of parents in relation to professional activity. There were no statistically significant differences (p>0.05) between working and non-working people. Working people were characterized by better personal functioning (p=0.237), greater impact of spirituality on functioning (p=0.597), better overall life situation (p=0.227), greater life satisfaction (p=0.151), less stress (p=0.211) and less coping resilience (p=0.467).

Life situation, life satisfaction, stress level, and coping resilience of parents in relation to marital status. Among those in a relationship, life satisfaction averaged 23.90±5.23, while among those who were single, life satisfaction averaged 19.08±6.45. It was shown that those in a relationship were statistically significantly (p=0.004) more satisfied with their lives (Fig. 2). Personal life functioning (p=0.061) and overall life situation of parents of children with heart disorders (p=0.184) were slightly better among those in a relationship,

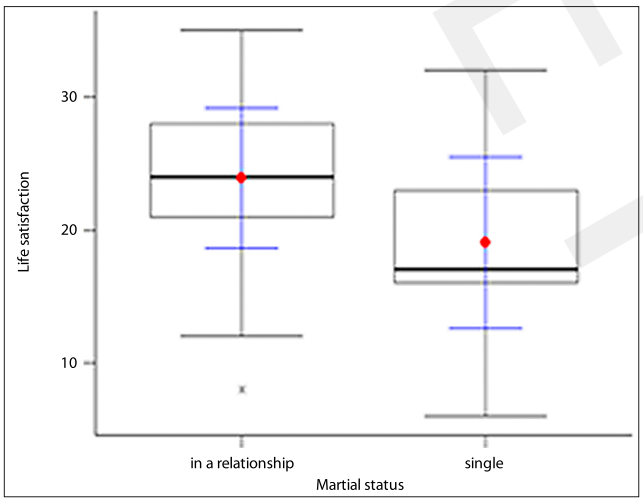

Figure 2. Marital status as a differentiating factor in the life satisfaction of parents of children with cardiac arrhythmias

while stress severity (p=0.393) and coping resilience were lower (p=0.363).

Life situation, life satisfaction, stress level, and coping resilience of parents in relation to religious practice. Among practitioners the impact of spirituality on personal life functioning for parents of children with cardiac arrhythmias averaged 14.90±3.37, overall life situation 36.69±5.01, and on stress intensity – 20.85±6.59. Among non-practitioners, the impact of spirituality on functioning was 10.22±2.80, and life situation – 32.19±6.05. Practitioners had a statistically significantly higher impact of spirituality on personal functioning (p<0.001), significantly better overall life situation (p<0.001), higher stress intensity (p=0.008), and lower life satisfaction (p=0.017). Coping resilience in practitioners was slightly higher, but the result was not statistically significant (p=0.865).

Life situation, life satisfaction, stress level, and coping resilience of parents in relation to place of residence. The living situation of rural residents was statistically significantly better than that of urban residents (p=0.024) (Fig. 3). Otherwise, the differences between rural and urban residents were statistically insignificant (p>0.05). Among rural residents, there was better personal functioning (p=0.478), greater influence of spirituality on functioning (p=0.144), slightly higher life satisfaction (p=0.670), and slightly higher stress (p=0.931) and coping resilience (p=0.467).

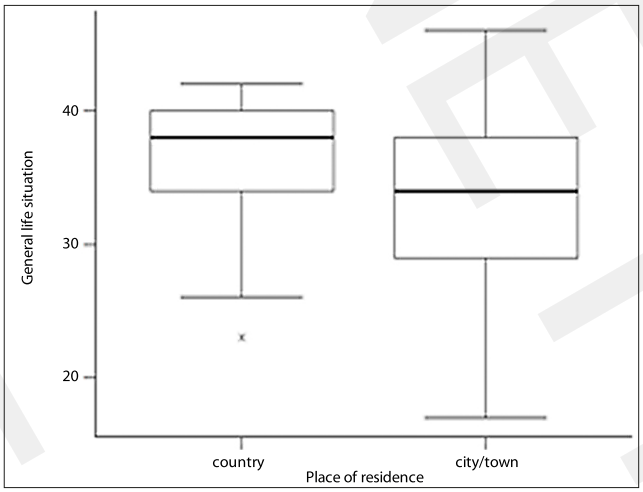

Figure 3. The effect of place of residence on the overall outcome of the life situation of parents of children with cardiac arrhythmias

DISCUSSION

The study showed that the level of personal functioning, the level of overall life situation, life satisfaction and stress levels among parents of children with cardiac arrhythmias were high, and the level of spirituality on life functioning and coping resilience was medium. It was shown that socio-demographic factors, such as gender and education, influenced the level of stress, marital status-influenced life satisfaction, while place of residence and religious practice-influenced the life situation of parents of children with idiopathic, cardiac arrhythmias.

It is difficult to compare the findings of the present study with those of others, as previous reports mainly focus on

assessing the functioning of parents of children with heart disease [22, 25] and other chronic diseases [21, 27, 28, 29]. Although the study group in the current study involved parents of children with benign cardiac arrhythmias, the causes of cardiac arrhythmias are complex, often of unknown origin, requiring extensive diagnosis, treatment, and frequent follow-up visits to a doctor. Some cardiac arrhythmias can cause unexplained sudden cardiac deaths [7, 8], therefore, the occurrence of a child's cardiovascular disease of cardiac arrhythmia in the family affects not only the affected child, but also the parents and their loved ones, which can cause changes in the emotions and behaviour of the parents. A child's illness can be viewed by the parents in terms of harm, threat and challenge. Parents who perceive their child's which lead to frequent misunderstandings in relationships not only with medical personnel, but also with the child and other family members [18, 23]. The presented study shows that the parents of children with heart disorders most often experienced such emotions as fear (83;83.0%) and anger (11;11.0%), as well as sadness (45;45.0%) and love (23;23.0%). Experiencing strong emotions is related to a parent's feeling of being threatened by a situation related to the child's illness. This type of behaviour can result in the parents adopting an attitude of helplessness, passivity and apathy, which hinders their participation in the therapeutic process of their ill child [37]. Perhaps for this reason, the results of the present study showed that despite a good score of overall life situation and life satisfaction, the coping capability of the parents of children with arrhythmias was at an average level (41.2%).

Functional coping with the child's illness includes, among other things, good communication and cooperation with medical personnel, providing support for each other, maintaining the child's positive self-esteem, and integrating the family. Manifestations of dysfunctional parental coping can include unintentional rejection of the child, over-protectiveness and lack of cooperation between parents [20, 37, 38]. The parents of children with idiopathic arrhythmias may experience stress related to the need to hospitalize the child, as well as anxiety related to the lack of knowledge about the type of arrhythmia in the context of the risk of sudden cardiac death. Persistent chronic stress as a result of an unusual stressful situation may affect the health of some parents, and thus the quality of care for the child with the illness [18].

The current study found a correlation between higher education and higher stress levels among parents of children with arrhythmias. In contrast, a study by Lin et al. showed a significant association of the effect of higher education on lower incidence of anxiety and depression among expectant mothers with a diagnosed heart disease in their child [39]. Therefore, it is very important to know how to cope with this stress by choosing appropriate strategies to do so. In a study by Dalir et al. conducted among 40 Iranian parents of children with congenital heart disease, a significant role was shown by spirituality (belief in God) in the coping strategy for their child's illness [25]. In the presented study, the influence of the spiritual sphere on parental functioning with regard to coping with the illness of a child with arrhythmia was at an average level (45.3%). As previous studies have shown, many parents make medical decisions regarding their child with illness in relation to their spirituality and religiosity, with most health care professionals unaware of this. In a study by Superdock et al, reference to faith in God by parents of palliatively treated children referred to the hope that with prayer they could ask God for a miracle of restoration of their child's health [40]. Similar results were obtained by Liu et al, who showed a positive correlation between quality of life scores and religious coping in the areas of vitality, social functioning and mental health among parents of infants with congenital heart disease. In addition, the results of these authors indicate that parents of infants with congenital heart disease who referred to spirituality/religion were less likely to experience depression. According to these authors, more attention should be paid to the positive impact of religious methods of coping with stress by parents of infants with congenital heart disease, and religious resources should be encouraged [41]. In contrast, the current study shows that life satisfaction among parents of infants with heart disease was high, with a significantly average impact of spirituality on the extant situation.

The slightly different results may also be indicative of the different clinical situations of the children. It seems that structural abnormalities of the heart or large vessels in a child gives rise to more serious complaints and disorders than cardiac arrhythmias, which may place a greater psychological burden on the child's parents than in the case of parents of children with arrhythmias with normal cardiac morphology. The results of the present study in terms of high stress levels among parents of children with arrhythmias are similar to those of parents of children with congenital heart disease, which may be due to the need to hospitalize the child for diagnostic and therapeutic purposes. As shown in a study by Lisanti et al. a higher level of stress is felt by mothers who have other children in addition to their hospitalized ill child [42]. The results of the current study show that more than half of the parents surveyed had other children besides the one suffering from arrhythmia (69.8%). In such a situation, when hospitalization involves a parent staying with a ill child in the hospital, it requires rearranging the daily schedule and providing care for the other children. A child's illness requiring hospitalization, especially one that is sudden and unexpected, often prevents the implementation of current plans and disrupts the daily functioning of the family.

The results of this study in relation to clinical practice suggest moving beyond focusing solely on the health considerations of a child with arrhythmias, and taking into account the interdependence of a child's illness on the mental health, emotions, stress and living situation of the parents.

Limitations and strengths of the study. The limitations of the study are the relatively long period of collecting the research material, and recruiting patients from one research centre from one area of Poland. For these reasons, in the future, the authors plan to conduct a multi-centre study especially comparing the living situation of caregivers of children hospitalized in district hospitals.

The strength of the study is that the results were obtained using standardized survey questionnaires which are a reliable and valid tool for assessing the stress, situation and life satisfaction of parents of children with arrhythmias. Most of the reports to-date on parents of children with cardiac problems are based on qualitative research, with a small number of subjects included in the study. Another strength of the current study is the relatively large number of subjects and restrictive clinical inclusion criteria.

CONCLUSIONS

The emotions of the parents should be taken into account in the medical care of their child. Particularly high levels of stress in mothers with higher education indicate the need to support this group of parents, as they may find it difficult to accurately formulate their needs and the expectations of the medical personnel. The varied impact of spirituality on family functioning in coping with a child's illness suggests that it is worth offering care that takes into account the spiritual aspects of support.

Medical care providers should be aware that various socio-demographic factors, stress, life satisfaction, and the role of spirituality in life, affect the emotions, behaviours and attitudes of the parents of hospitalized children. Medical staff should therefore adjust their approach according to the individual characteristics and needs of parents/caregivers of children with arrhythmias in order to ensure the quality of medical care.

Acknowledgements
The authors would like to express their gratitude to Mr. Piotr Dec from a statistics company for their statistical support. The authors also wish to thank Ms. Barbara Wójcik and Ms. Monika Staszkiewicz from the Secretariat of the Pediatric Cardiology Department for the assistance throughout this research project, as well as all the parents of hospitalized children with congenital heart disease who participated in this study.

Funding
This research was funded by the Medical University of Silesia in Katowice, Poland, under the "Young Scientist" research grant, no: BNW-2-043/N/4/Z.

REFERENCES

1. Shen L, Liu S, Hu F, et al. Electrophysiological characteristics and ablation outcomes in patients with catecholaminergic polymorphic ventricular tachycardia. J Am Heart Assoc. 2023;12(24):e031768. http://doi:10.1161/JAHA.123.031768
2. Oeffl N, Krainer M, Kurath-Koller S, et al. Cardiac arrhythmias requiring electric countershock during the neonatal period-a systematic review. Children (Basel). 2023;10(5):838. http:// doi:10.3390/children10050838
3. Taylor RA, Thomas R, Lawrence D. Nonutility of diagnostic testing in ambulatory patients with supraventricular tachycardia. Pediatr Emerg Care. 2022;38(3):e1036-e1040. http://doi:10.1097/PEC.0000000000002649
4. Drago F, Battipaglia I, Di Mambro C. Neonatal and paediatric arrhythmias: clinical and electrocardiographic aspects. Card Electrophysiol Clin. 2018;10(2):397–412. http://doi:10.1016/j.ccep.2018.02.008
5. Brancato F, De Rosa G, Gambacorta A, et al. Role of troponin determination to diagnose chest pain in the paediatric emergency department. Pediatr Emerg Care. 2021;37(12):e1589-e1592. http://doi:10.1097/PEC.0000000000002123
6. Velázquez-Rodríguez E, García-Hernández N, Silva-Oropeza E, et al. Idiopathic left fascicular ventricular tachycardia in children and adolescents. Taquicardia ventricular fascicular izquierda idiopática en niños y adolescentes. Bol Med Hosp Infant Mex. 2022;79(4):248–258. http://doi:10.24875/BMHIM.21000222.
7. Wojcik MH, Krous HF, Goldstein RD. Sudden unexplained death in childhood: current understanding. Pediatr Emerg Care. 2023;39(12):979–983. http:// doi:10.1097/01.pec.0000997588.40847.b0
8. Tsuda T, Fitzgerald KK, Temple J. Sudden cardiac death in children and young adults without structural heart disease: a comprehensive review. Rev Cardiovasc Med. 2020;21(2):205–216. http://doi:10.31083/j.rcm.2020.02.55
9. Cohen MI. Frequent premature ventricular beats in healthy children: when to ignore and when to treat?. Curr Opin Cardiol. 2019;34(1):65–72. http://doi:10.1097/HCO.0000000000000581
10. Turska-Kmieć A. Natural history of idiopathic ventricular arrhythmias in children. WDR 2017;3(44):4–8. https://doi.org/10.5604/01.3001.0010.4656
11. Van Niekerk C, Van Deventer BS, du Toit-Prinsloo L. Long QT syndrome and sudden unexpected infant death. J Clin Pathol. 2017;70(9): 808–813. http://doi:10.1136/jclinpath-2016-204199
12. Wall JJ, Iyer RV. Catecholaminergic polymorphic ventricular tachycardia. Pediatr Emerg Care. 2017;33(6):427–431. http://doi:10.1097/PEC.0000000000001156
13. Mariani MV, Pierucci N, Fanisio F, et al. Inherited arrhythmias in the paediatric population: an updated overview. Medicina (Kaunas). 2024;60(1):94. http://doi:10.3390/medicina60010094
14. Whitaker J, Wright MJ, Tedrow U. Diagnosis and management of ventricular tachycardia. Clin Med (Lond). 2023;23(5):442–448. http://doi:10.7861/clinmed.2023-23.5.Cardio3
15. Escudero CA, Tan RBM, Beach CM, Dalal AS, et al. Approach to wide complex tachycardia in paediatric patients. CJC Pediatr Congenit Heart Dis. 2022;1(2):60–73. http://doi:10.1016/j.cjcpc.2022.02.003
16. Manickavasagam A, Roshan J. Catheter ablation of paediatric ventricular arrhythmias: a work in progress. Indian Pacing Electrophysiol J. 2023;23(4):108–109. http://doi:10.1016/j.ipej.2023.06.002
17. Ljubas Perčić D, Krmek N, Benko I, et al. Frequent accelerated idioventricular rhythm in an otherwise healthy child: a case report and review of literature. BMC Cardiovasc Disord. 2023;23(1):37. http://doi:10.1186/s12872-023-03074-5
18. Zhang Y, Zhou H, Bai Y, et al. Families under pressure: A qualitative study of stressors in families of children with congenital heart disease. Stress Health. 2023;39(5):989–999. http://doi:10.1002/smi.3240
19. Olowookere SA, Badmus SA, Laoye O, Ijadunola MY, Hassan M. Burden of family caregivers of ophthalmic patients in a university teaching hospital in south-west Nigeria. Malawi Med J. 2019;31(1):39–44. http://doi:10.4314/mmj.v31i1.7
20. Toledano-Toledano F, Luna D. The psychosocial profile of family caregivers of children with chronic diseases: a cross-sectional study. Biopsychosoc Med. 2020;14:29. http://doi:10.1186/s13030-020-00201-y
21. Cetinbakis G, Bastug G, Ozel-Kizil ET. Factors contributing to higher caregiving burden in Turkish mothers of children with autism spectrum disorders. Int J Dev Disabil. 2018;66(1):46–53. http://doi:10.1080/20473869.2018.1478630
22. Bektas İ, Kır M, Yıldız K, et al. Symptom Frequency in children with congenital heart disease and parental care burden in predicting the quality of life of parents in Turkey. J Pediatr Nurs. 2020;53:e211-e216. http://doi:10.1016/j.pedn.2020.04.012
23. Semerci R, Uysal G, Açikgöz A, Demirer P. The predictive power of religious coping on care burden, depression, stress, and anxiety of parents of paediatric oncology patients in Turkey. J Relig Health. 2024;63(5):3618–3635. http://doi:10.1007/s10943-024-02096-3
24. Allam LE, Nabih MA, El-Missiry MA. The psychological impact of permanent cardiac pacemakers on paediatric patients and their parents: A case control study. Indian Heart J. 2018;70(6):872–878. http://doi:10.1016/j.ihj.2018.02.007
25. Dalir Z, Heydari A, Kareshki H, Manzari ZS. Coping with caregiving stress in families of children with congenital heart disease: a qualitative study. Int J Community Based Nurs Midwifery. 2020;8(2):127–139. http://doi:10.30476/IJCBNM.2020.83029.1113
26. Yakubu YA, Schutte DW. Caregiver attributes and socio-demographic determinants of caregiving burden in selected low-income communities in cape town, South Africa. J Compassionate Health Care. 2018;5:3. https://doi.org/10.1186/s40639-018-0046-6
27. Gonzalez M, Zeidan J, Lai J, et al. Socio-demographic disparities in receipt of clinical health care services during the COVID-19 pandemic for canadian children with disability. BMC Health Serv Res. 2022;22(1):1434. http://doi:10.1186/s12913-022-08672-1
28. Pankewicz A, Davis RK, Kim J, et al. Children with special needs: social determinants of health and care coordination. Clin Pediatr (Phila). 2020;59(13):1161–1168. http://doi:10.1177/0009922820941206
29. Han J, Zhang L, Yang F, Wang L. Illness cognition and associated socio-demographic and clinical factors in parents of children with leukemia. BMC Psychol. 2024;12(1):289. http://doi:10.1186/s40359-024-01798-3
30. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: guidelines for reporting observational studies. Online https://www.equator-network.org/reporting-guidelines/strobe/ (access: 2024.06.29)
31. Kolarczyk E, Morka A, Barański K, Szydłowski L. Life situation of a caregiver of a child with congenital heart defect and/or other cardiac

problems: structure and preliminary validation of a new questionnaire. Front Psychol. 2023;14:1194031. http://doi:10.3389/fpsyg.2023.1194031
32. Juczynski Z. Satisfaction with Life Scale. In: Measurement tools in health promotion and psychology. Warsaw: Psychological Testing Laboratory of the Polish Psychological Association; 2001. p. 134–138.
33. Juczynski Z, Ogińska-Bulik N. Tools for measuring stress and coping with stress. Psychological Testing Laboratory of the Polish Psychological Association, 2009.
34. Piórowska A, Piórowski K, Basińska M, Janicka M. Polish adaptation of The Brief Resilience Coping Scale. Pedagogical Rev. 2017;1:215–227. Online http://cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.desklight-03594bc7-9cb9-462e-aa8e-03f31b24e84f (access:20.01.2025).
35. WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Participants. Online https://www.wma.net/policies-post/wma-declaration-of-helsinki/ (access:2024.03.01).
36. Q&A: Good clinical practice (GCP). Online https://www.ema.europa.eu/en/human-regulatory-overview/research-development/compliance-research-development/good-clinical-practice/qa-good-clinical-practice-gcp (access:2024.03.01).
37. Law E, Fisher E, Eccleston C, Palermo TM. Psychological interventions for parents of children and adolescents with chronic illness. Cochrane Database Syst Rev. 2019;3(3):CD009660. http://doi:10.1002/14651858.CD009660.pub4
38. Feudtner C, Nye RT, Boyden JY, et al. Association between children with life-threatening conditions and their parents' and siblings' mental and physical health. JAMA Netw Open. 2021;4(12):e2137250. http://doi:10.1001/jamanetworkopen.2021.37250
39. Lin C, Xiaoyi S, Xiaoman C, et al. Development of a knowledge, attitude, and practice scale for cardiac rehabilitation for parents of children with heart disease. J Pediatr Nurs. 2023;72:161–167. http://doi:10.1016/j.pedn.2022.11.028
40. Superdock AK, Barfield RC, Brandon DH, Docherty SL. Exploring the vagueness of religion & spirituality in complex paediatric decision-making: a qualitative study. BMC Palliat Care. 2018;17(1):107. http://doi:10.1186/s12904-018-0360-y
41. Liu JF, Xie WP, Lin WH, Cao H, Chen Q. The association of positive or negative religious coping methods with psychological distress and quality of life among parents of infants with congenital heart disease. Front Pediatr. 2021;9:753032. http://doi:10.3389/fped.2021.753032
42. Lisanti AJ, Allen LR, Kelly L, Medoff-Cooper B. Maternal stress and anxiety in the paediatric cardiac intensive care unit. Am J Crit Care. 2017;26(2):118–125. http://doi:10.4037/ajcc2017266