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content

Surgical management of Coarctation of the Aorta in the Pediatric Population: A fifteen-year experience

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Introduction

Coarctation of the aorta is one of the most commonly encountered congenital heart defects (CHD), in the pediatric population. It is defined as a hemodynamically significant stenosis of the descending aorta, typically at the site of insertion of ductus arteriosus. It has an estimated incidence of 4-6 cases per 100,000 births, accounting for 5-8% of all congenital heart defects [1-4]. According to The New England Regional Infant Cardiac Program (NERICP), coarctation of the aorta is the fourth most common defect requiring surgery during the first year of life [5]. It can present as an isolated lesion or coexist with other cardiac or extra-cardiac congenital defects. The most common one include bicuspid aortic valve, patent ductus arteriosus, ventricular septal defect, mitral stenosis, berry aneurysms in the circle of Willis [6-8].

Clinical presentation is heterogenous, varying from asymptomatic to congestive heart failure, acute pulmonary edema and cardiogenic shock, depending on the degree of coarctation, the development of collateral circulation and age at presentation [9]. During the neonatal period patients may present with circulatory collapse and pulmonary edema, reduced or absent peripheral pulses, tachypnea, lethargy and progressive metabolic acidosis [9-13]. In early childhood, they present primarily with symptoms of congestive heart failure (CHF) including tachypnea, irritability, sweating, feeding difficulties and failure to thrive [9-13]. In adolescence and adulthood patients may be asymptomatic, presenting with non-specific symptoms including exercise intolerance, fatigue and cramps in the lower limbs, recurrent headaches, epistaxis, vertigo, tinnitus, high blood pressure and difference in blood pressure between arms and legs and reduced or absent peripheral pulses [9-13]. Treatment options for coarctation of the aorta include both surgery and catheter-based procedures. Several surgical techniques have been developed including extended resection with end-to-end anastomosis, prosthetic patch aortoplasty, subclavian patch aortoplasty, interposition grafting and extra-anatomic bypass grafting [9-11,13-18]. Catheter-based approaches include balloon angioplasty and stenting. The choice is based on the age at presentation, the type of coarctation and the presence of associated anomalies, as well as other patient-specific characteristics [9-11,18-23].

Methodology

We conducted an observational, retrospective, cohort study collecting data from the medical records of the Department of Cardiovascular Surgery at the University Hospital Center "Mother Theresa" Tirana (UHCMT), Albania. Baseline patient

characteristics, including demographic, clinical and surgical data of patients admitted in the span a fifteen year period (March 2004 – March 2020), were recorded. The aim of this study was the evaluation of the surgical management of coarctation of the aorta in the pediatric population, in our institution.

Results

In this single center study, a total of 85 patients were admitted with a diagnosis of coarctation of the aorta in the Department of Cardiovascular Surgery and underwent surgical treatment. Males represented 62.36% of our cohort.

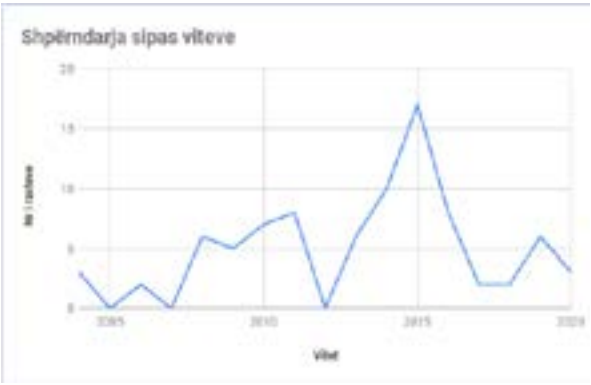
Based on their age distribution, patients were categorized in four groups (neonate, infant, early childhood, adolescents and adults). Adolescents and adults represented the subgroup with the highest number of patients 29.41% of the cohort, whereas patients in the early childhood, the subgroup with fewer patients, 17.65% of the cohort.

TABLE 1. Age distribution

	Nr of patients	Percentage
Neonate (0-28 days)	21	24.70%
Infant (29 days- <1 year old)	24	28.24%
Early childhood (1 year old -11 years old)	15	17.65%
Adolescents and adults (>12 years old)	25	29.41%
Total	85	100.0%

Looking at the yearly distribution, the highest incidence was reported in 2015 (17 patients) and the lowest in 2005, 2007 and 2012 (0 patients).

FIGURE 1. Yearly distribution

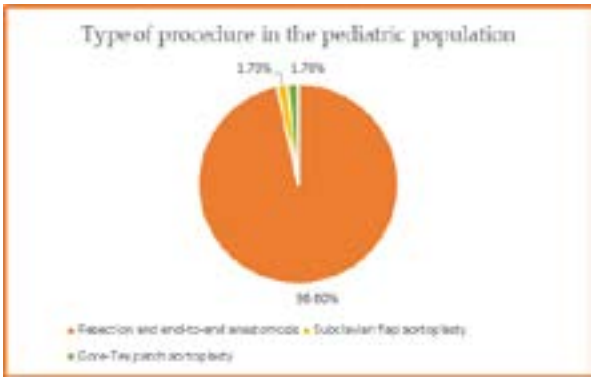


The pediatric population was arbitrarily defined as patients under the age of 12 years old, encompassing in total 60 patients. The age at presentation of the pediatric population ranged from 0.1 months (3 days) to 72 months (6 years old), the mean (SD) age was 5.96 ± 11.91.

20% of pediatric cohort presented as surgical emergencies, with acute pulmonary edema. 75% of the pediatric population (45 patients), presented with symptoms of congestive heart failure (CHF).

Our data revealed that resection with end-to-end anastomosis was the most frequently performed procedure in 96.6% of the pediatric cohort, followed by subclavian patch aortoplasty in 1.7% of patients and Gore-Tex patch aortoplasty in 1.7% of cases, as well.

FIGURE 2. Type of procedure in the pediatric population



Our study found that in a subgroup of patients, surgical treatment of coarctation of the aorta was associated with concomitant procedures, including patent ductus arteriosus (PDA) ligation in 19% of cases, pulmonary artery banding in 3.4%

of cases and subaortic membrane resection in 1.6% of cases. In 76% of patients coarctation repair was performed alone.

In a subgroup of patients, a second concurrent heart defect was present. Of these associated congenital heart defects, patent ductus arteriosus (PDA) was the most common one, accounting for 70.6 % of cases, followed by ventricular septal defect (VSD) in 17.6% of cases and subaortic stenosis and ascending aorta aneurysm in 5.9% of cases, respectively.

Table 2. Associated congenital heart defects repaired concomitantly

Associated anomalies repaired concomitantly	Nr of patients	Percentage
PDA	12	70.60%
VSD	3	17.60%
Subaortic stenosis	1	5.90%
Ascending aorta aneurysm	1	5.90%

All patients (100%) were found to be hemodynamically stable at the end of surgery. All surgical complications developed in the post-operative period. Mean (SD) clamping time was estimated to be 20.68 ± 10.16 min.

Post-operative complications including chylothorax (50%), acute kidney injury (25%) and anastomotic thrombosis (25%), developed in 6.7% of the pediatric population.

Early post-operative complications	Nr of cases	Percentage
Chylothorax	2	50%
Acute kidney injury (AKI)	1	25%
Anastomotic thrombosis	1	25%

Mortality in our cohort was 5%, with 3 patients dying due to complications in the post-operative period.

Discussion

Coarctation of the aorta is one of the most common congenital heart defects and patients can benefit from a broad spectrum of available surgical treatment options.

In our cohort, there was a slight male predominance. 62% of the cohort were male, with a male/female ratio of approximately 1.6/1. These findings are consistent with reported statistics [5]. The highest incidence was reported in 2015

(17 patients) and the lowest in 2005, 2007 and 2012 (0 patients). The mean (SD) age at presentation was 5.96 ± 11.91 months.

In our study, 20% of the pediatric population presented as surgical emergencies with acute pulmonary edema and underwent surgical repair within the first two weeks of the neonatal period. The predominant clinical presentation in the pediatric population was congestive heart failure (CHF), in 75% of all patients, consistent with current literature on clinical presentation of coarctation of the aorta with signs of heart failure in the first year of life [9-13].

In our study, the mainstay surgical procedure in the pediatric population was resection with end-to-end anastomosis (96.6%), followed by subclavian patch aortoplasty (1.7%) and Gore-Tex aortoplasty (1.7%). These findings are consistent with current literature and recommended practices [9-11,13-18]. Extended resection with end-to-end anastomosis is the preferred surgical techniques in native, discrete coarctation in infancy and early childhood [9-11,13-18,24,25]. It allows the complete resection of the stenotic segment without the use of any prosthetic material and is associated with low mortality and recoarctation rates [11,24,25].

Prosthetic patch aortoplasty offers several advantages including the treatment of longer coarctation segments and lower recoarctation rates, however it is associated with a higher prevalence of aortic aneurysms [9-11,26,27]. Despite the use of PTFE prosthetic patches instead of Dacron ones, the risk for aortic aneurysms remains higher, compared to other techniques [9-11,26,27]. Subclavian flap aortoplasty can also be used to repair longer segments of coarctation, but it can lead to the development of the subclavian steal syndrome [9-11,28].

Interposition grafting and extra-anatomic bypass grafting are usually employed in the treatment of long hypoplastic aortic segment and in adult patients, as prosthetic grafts pose growth limitations in the pediatric population [11,29,30].

Catheter-based treatments including balloon angioplasty and stenting are less preferred in infants and young children, as they are associated with higher rates of restenosis and late aneurysm formation compared to surgical repair [9-11,18-23,31-33]. Balloon angioplasty and stenting are primarily used in the treatment of native coarctation in older children and adults, as well as in recurrent coarctation [9-11,18-23,31-33]. Balloon angioplasty can also be used as a palliative procedure in critically ill neonates, providing some clinical improvement until they are stable to undergo surgical repair [33].

In our cohort in a subgroup of patients, surgical treatment of coarctation of the aorta was associated with concomitant procedures, including patent ductus arteriosus (PDA) ligation in 19% of cases, pulmonary artery banding in 3.4% of cases and subaortic membrane resection in 1.6% of cases.

Our study found that the most common concomitant congenital heart defect to

be repaired in tandem, was patent ductus arteriosus (PDA) accounting for 70.6% of cases, followed by ventricular septal defect (VSD) in 17.6%, subaortic stenosis and aneurysm of the ascending aorta in 5.9% of cases, respectively.

Complications of coarctation of the aorta can be classified as early and late complications. Early complications are associated with the post-operative period and they include paradoxal hypertension, chylothorax and paraplegia [9]. In our cohort, the most common one was chylothorax (50%), followed by acute kidney injury (25%) and anastomotic thrombosis (25%), developing 6.7% of the pediatric population.

Late complications are associated with the type of surgical procedure and the pathogenesis of coarctation and they influence the long-term morbidity and mortality rates in this population. These complications include aneurysm formation, coronary heart disease, arterial hypertension, cerebrovascular complications and recurrent coarctation [9,34-39].

Following surgery, in the early post-operative period all patients (60 patients) were hemodinamically stable. The mortality rate in our cohort was 5%, consistent with current studies and literature, emphasizing that surgical repair of coarctation of the aorta is safe and effective [11].

Conclusion

Despite its reported prevalence, coarctation of the aorta among pediatric patients remains sporadic in our population. Our study revealed that early surgical repair is safe and effective, associated with excellent outcomes and low mortality rates, consistent with current literature and recommended practices. The challenges in the management of coarctation of the aorta in the pediatric population don't lie in the treatment of the stenotic segment, but in preventing long-term cardiovascular complications. Risk stratification of patients and long-term follow-up programs can improve outcomes and survival.

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Narratives of Albanian female offenders who killed their intimate partners during 2010-2014. Case report series

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Abstract

Introduction: *Most homicide perpetrators in Albania (according to data from Tirana Central Prison Directory, 2015) were males (n=1170) and only 20 were females. Intimate partner homicides comprise the largest category of female-perpetrated homicide, 8 out of 20 female offenders were convicted because of intimate partner homicide.*

Aims: *The present study examined the life experiences of Albanian women, who are serving prison sentences for killing their male intimates between 2010 and 2014. "We are here due to a damned minute!" said one of the women blaming the triggering event. Several psychosocial factors which are hidden can interact in chain of events that may extend back from a triggering event to long-term processes that began in their childhood. These case studies shed light on those direct or indirect factors contributing to the murder.*

Method: *On July 2015 the convicted women responded to open-ended interview questions, providing narrative accounts of their personal experiences from childhood to the act of killing. Questions were related to childhood experiences, relations and*

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possible support from their biological family, possible traumatic events, relations to former partners, family dynamics with the murdered partner and children, attitudes toward their duties in the family and children's responsabilities, insight for the causes of murder, social systems they looked for help, their feelings, circumstances and motivational contexts of intimate homicide, as well as regret.

Results: *Our in- depth interviews revealed that there was a similar profile of female homicide offenders who killed their intimate partners: they were grown up in harsh psychosocial circumstances during their childhood, most of them having some type of trauma, economically disadvantaged families, victims of abuse, under-educated, with limited opportunities and unemployed in the long-term prior to being incarcerated. The findings suggest that those psychosocial factors have played a role in the commitment of the crime.*

Keywords: *female, homicide, partner, family, Albania, narratives*

Introduction

The term "homicide" refers to the killing of a person. According to statistics, the majority of victims, as well as subjects who commit homicide, are men (Jensen, 2001). In Albania, according to the 2015 statistics of the General Directorate of Prisons in Tirana, 1170 men and 20 women are serving the sentence for murder, of which 8 of them were convicted of murdering their partner. The majority of victims and subjects who committed crimes in the USA during the years 1976-2005 were male (Fox & Zawitz, 2007). Society is not ready to call the woman capable of committing a murder. The woman is perceived as the giver of life, her nature is to nurture, not to destroy. The gender role also reflects the social expectation for the women, little girls are taught from a young age that they will represent everything beautiful. It is difficult for the society to accept violence in women.

Stöckl et al. conducted in 2013 a summary of the overall prevalence of partner homicide in different states. They analyzed data collected from 66 countries. On average it turned out that 1 out of 7 homicides in the world (13.5%, IQR 9.2-18.2) is committed by a partner (Stöckl et al., 2013). This figure is close to the percentage given by Fox & Zawitz (2007) for the USA, where crime between partners accounted for about 11% of murders committed during the 30 years span 1976-2005.

Also, according to statistics, men who kill their partners are more numerous than women who kill their partners. According to Mouzos & Rushforth (2003), women constituted only 20% of those subjects who committed homicide against their partner (cited by Mouzos & Rushforth, 2003 in Johnson & Hotton, 2003). Based on the analysis of Stockl et al. (2013) in 66 countries, females kill their male partners 6 times less compared to males who kill their female partners (38.6%

versus 6.3%). When women commit homicide, they are more likely to commit it against their partner (Brookman, 2005). Homicide of the partner has a different portrayal when the killer is female compared to the male killer (De Lisi & Conis, 2012). Women are violent mainly only in conditions of extreme stress or repeated provocation (De Lisi & Conis, 2012).

Several perspectives are offered which attempt to explain the murder of intimate partners, including the feminist perspective: The theory of self-defense. The feminist framework relies on the characteristics of abusive relationships to explain homicides. Studies show that women who kill their abusers often do so in self-defense after years of severe abuse (Browne, 1987; Ewing, 1987). Feminists see the murder of an abusive partner as a woman's last effort to protect herself or her children from further physical and mental harm (Walker, 1979; O'Keefe, 1997; Leonard, 2002).

In general terms, criminal behavior includes three categories of factors: psychological, biological and social. In fact, human behavior is the product of a complex interaction between many factors. The vast majority of poor people do not commit crimes, raising the question of what distinguishes these individuals who commit homicide from other individuals who have similar life experiences and do not exhibit such behavior. Biological factors should also be considered, as they play a role in the individual's vulnerability to unfavorable life circumstances. However, while biological factors determine the aberrant personality structure, the environment can play a role in how the personality will be expressed as behavior.

Method

Aim of the study

This study was focused on Albanian women who were convicted for killing their partners, in the period 2010-2014. "We are here due to a damned minute!" said one of the subjects blaming the inciting moment of the crime. But several psychosocial factors might underlie, which interact in chains of events that may extend back from the triggering event to long-term processes that begin in their childhood. These case studies would help to understand direct or indirect psychosocial factors contributing to the murder and the profile of the women who committed intimate partner homicide.

Sample and type of the study

This study is a case report series. The sample of the study is purposeful, consisting of six women, aged 21-59 years, who were currently convicted and were serving a sentence for intimate partner murder during 2010-2014. The interviews were

conducted in July 2015, in Women's Prison 325 in Tirana, Albania (Institution for the Execution of Criminal Decisions) by one of the authors of this article, a psychologist, in scheduled and consented meetings.

Instruments

The data was collected through a semi-structured interview with female offenders, based on open questions that were considered important to answer the research question. The narrative interviews covered extensively the lives of these women from their childhood to the act of murder. The interview contained open questions about their childhood, family relationships in their family of origin, traumatic life events, relationships with previous partners, life with the current partner and their children, the attitudes of these women to the responsibility and their family role, support from the family of origin and partner's family, systems they turned to for help, their reflection on the causes of committing the crime, the feelings and situations on the day of the murder, as well as their remorse.

The questions of the interiew were divided into several categories:

1. Socio-demographic data: women's age at the time of the interview and at the time of committing the crime, place of birth, residence, education, employment, family income, religious belief, marital status at the time of the crime, age difference with partner, number of children.
2. Questions about childhood. By means of these questions an attempt was made to obtain information about important life events, which may possibly indirectly have an influence on the crime, although the latter belongs to a later period of life. This part of the questionnaire contained an open question about childhood, as well as more specific questions related to family relations in the family of origin, care received in childhood, possible physical, emotional, or sexual abuse.
3. The third part of the interview contained two open questions through which we were able to get information on previous intimate relationships of these women. The course of these previous relationships/marriages may have an indirect impact on the perceptions and expectations of the latter relationship established with the partner to whom the woman committed the crime.
4. The fourth part of the interview was focused on life experiences with the partner to whom they committed the crime. The open question tried to explore the course of this relationship and the attitudes of these women towards family role and responsibility.
5. The fifth part of the interview focused on the causes of crime commitment. This part contained open questions which explored the meaning of the

murder according to the own subject's perception. The interviewee explains the circumstances and motives that led her to kill her partner.

6. The last part of the interview was based on questions which explored the subject's feelings and situations in the last period before the murder, possible suicidal ideation, life expectations and problem-solving options, relationships and possible help from their biological family or their partner's family, the social systems they turned to for help, as well as a question related to remorse for committing the crime.

Data analysis

Quantitative analysis was applied for socio-demographic data. The analysis of the content of the open-ended interview questions was qualitative. The content of each question was analyzed by searching for possible topics in the subject's words, thus defining thematic categories. Further, we looked for common characteristics of the women who had killed their intimate partners, the common characteristics of their partners as referred, the influencing life events and the failure of support factors were grouped. We tried to create a model of interaction between identified psychosocial factors.

Results and discussion

1. Demographic data

TABLE 1: Demographic data of female offenders convicted for intimate partner homicide

GENERAL DATA	FREQUENCY
Age of women at the time of the interview	21-59 years old (mean 39 years old)
Age of women at the time of homicide	18-55 years old
Place of birth (urban vs. rural)	100 % rural
Residence (urban vs. rural)	100 % rural
The number of children in the biological family	5-10 children (mean 7 children)
Education	83 % 8thgrade 17 % college
Previous employment	33 % workers (lasting 6 months – 5 years) 67 % unemployed
Relationship with the partner	17 % husband 17 % ex-husband 66 % boyfriend

Relationship duration	50% long-term relationship (4 years - 35 years, mean 23 years) 50% short-term relationship
Religion	66 % muslim 17% orthodox 17% catholic
Economic situation	100% poor
Mothers vs. women without a child	67 % were mothers (1-6 children); two of them had a child with victim. 33% no children
Tool of the crime	67 % weapon 16.5% axe 16.5% hot oil in ear
Crime scene	100% at home

Table 1 shows general and demographic data of the study's sample.The sample consists of women 21 to 59 years of age. The youngest woman committed the murder at the age of 18 years old, while the oldest one at the age of 55 years old, after a long-term marriage. Table 1 shows some disadvantage characteristics of these convicted women related to education, their income and employment. Most of the female prisoners interviewed had completed the 8th grade and were unemployed or without a stable job. Their economic situation was very difficult. Subject 4 says: "After finishing the 8th grade, I couldn't continue the school, because we didn't have the opportunity".

All the women in this sample came from rural areas of Albania and were raised in poor families with many children (5-10 children, on average 7 children). A. came from a family with 10 children. She confessed about the economic situation in her previous marriage: "My husband only knew how to drink all day and didn't care if we had food or not." We lived in a house made of reed; it wasn't even made of wood." Regarding her second marriage, with the husband she would kill years later, she confessed: "When the house collapsed and at this time my husband was in prison, I lived with the children in a military tent for 2 years. My 6-year-old daughter died while she was out grazing sheep with her 8-year-old sister." Their family subsisted on sheep, a cow and some farmland. Other women of this sample had a similar difficult economic situation. E. spoke about her marriage at the age of 17: "The economic situation was bad, there was no water. He married when I was young, left me there at home with his parents. He worked outside, came home rarely, and left".

Educated women may have an opportunity to leave a problematic relationship, while uneducated women have fewer options to support themselves and their children after separation their partner. They are limited in their ability to find other options and to cope with life after separation from their partner. When one of

the women separated from her partner, she found herself without the support of her biological family, social assistance, without a roof over her head, and being without a solution she returned to her abuser after a month of separation. "I was like a bird without a nest"- she said. In the USA, the prevalence of intimate partner homicide by women has dropped significantly by 75% during 1976-2005 (Fox & Zawitz, 2007) and this may be related to the increase in abused women's shelters during these decades. The stress of the women in this sample was even more, since nearly one third of the sample had children and felt the moral responsibility of the mothers. Stressful problems against the complexity and responsibility of motherhood can lead women to despair, hopelessness and favor potential crime (Roberts, 1993).

2. Childhood and youth

Almost all subjects grew up in patriarchal families, where the father was the one who decided about important things in the family, the wife and children were under his control. The women interviewed were emotionally neglected during childhood. As children they were devoted to the family by giving help and were taught not to cross the limits established by parents. *"We did our own things, so we didn't cross the borders"* - says one of the subjects. *"We knew our things as children and tried to fulfill our duties"* says another woman. All subjects have felt grown up prematurely, have suppressed their own feelings to devote themselves to the family and to respect the family duties. *"I didn't have a childhood at all. We were 6 children; we were adults before we were born. At the moment we learned to walk we were ready to work"*- said C. Another women of this sample confessed: *"Normally my mom was completely under dad's control. His word was not disputed. Mom, just like us as children, knew our things and followed them, we didn't cross the limits, so we didn't have problems with dad."* In this case, the child internalizes the attachment model presented by the biological family and has the same expectations for the new relationships she will encounter later in life as women. This woman who says: *"I was more connected to my father than to my mother. He was really strict and his word was the law, but if you didn't break the rules we had in our family then everything was fine"* from the marriage she will expect that she can be controlled by her husband, but as far as she follows his rules it will go fine, just as it happened during her childhood and youth. She got the first wrong concept in the family, that is, that the rules must be followed so that things will go well. She could not reflect on whether the unfair rules can be followed also in the long-term, even when the difficulties encountered by her exceed her own threshold of mental health balance, that is, what she herself can handle. A folk expression says: "God only gives you as much as you can handle", but did this apply to those women?

Four of the women had experienced significant losses in life. Two of the women experienced the death of their father at the age of 18 years old, among them one also lost her partner of several year relationship, who died few years after her father. One of the subjects was sexually abused at teen age by the man she killed years later. Another woman, A. had a previous failed marriage that totally disappointed her expectations. The man she married was an alcoholic and they lived in extreme poverty. She was abandoned by her biological family of origin when she left the husband and their child to be with a new partner whom she killed many years later. Her parents and siblings did not meet her for 27 consecutive years of the second marriage, no one from biological family came to meet her, even on the day of her 6-year-old daughter's funeral. The impact of trauma can be invisible and cumulative. This is A. 's own explanation: "I think that the biggest consequence that I haven't overcome was the abandonment, rather than the husband. I tried to fill that void in the family I created with my husband, despite our strong disagreements. He used to remind me: "*Your family have not accepted you. Is there a harsher word than this for me? I have found support in my husband's family, but not in my biological family. They abandoned me*".

These women did not report any deviant behavior during their childhood and youth, but rather subservientness to family norms. Even though the mental health problems from their childhood were not reported we did not evaluate their mental state with a specific tool, because of this we did not exclude the possibility that they had internalizing problems in their childhood. C. revealed: *"I was an introvert and did not often reveal what I felt even to my closest friends. I was born with the feeling of distrust, and even today I still have it"*. Other studies suggest that women who commit homicide have shown less aggressive behavior during their childhoods because they show more problems on the introverted spectrum (Yourstone et al., 2008). In addition, they may have had difficult psychosocial circumstances during their childhood (Yourstone et al., 2008), as was reflected in the data of our sample.

3. Women's previous relations with men other than the intimate partner killed

One of the interviewed women had a previous marriage in conditions of extreme poverty. She left her first partner to marry the partner she killed many years later. Because of that her parents abandoned her. She found herself facing life with her second husband in the same conditions of poverty, moreover now she was abused and contempted by her husband. The man for whom she thought she had sacrificed by enduring abandonment by her biological family teased her knowing she had nobody from whom to seek support from. We think that in that case of abandonment by the biological family, as well as two disappointed marriages have

influenced to accumulate much stress in the long-term. She held hostage to her choices, her limited point of view, the impossibility of alternatives and she failed to separate from the second husband, what would have possibly avoided the murder. Another women in this sample had a previous long-term relationship with a partner who died accidentally a year before she committed the crime.

4. Family life with the intimate killed partner

Half of the women in this sample had a long-term relationship with the victim (4 years up to 35 years). The rest of the sample had a short time relationship. In childhood, some of the women revealed that they were attached to the men of the family (fathers or brothers), but at the time of committing the crime they were abandoned, which does not indicate strong ties to the biological family. Married women referred good relations with the husband's family, indirectly showing that they were respected by them. When they got married, they continued not to cross the boundaries as they were taught in childhood, showing themselves as devoted mothers and wives. 67% of the women in the sample are mothers, having 1 to 6 children (two of them had children with the victim), while nearly one third of the sample had no children. Despite the bad economic situation, some the women worked and took care of their children. A mother says: *"I was doing two jobs. I took care of the children despite the problems knowing how important the school is, especially for us women".*

Almost all male victims had a similar profile. They were physically, psychologically and/or sexually abusers towards their partners. Two of them were sexual abusers. Almost all the victims were lawbreakers. Two of them had served sentences in prison. One of the victims on the day the woman killed him went to attack her with a gun and a knife. Married husbands, except in one case, did not take responsibility for the emotional and economic situation of their families. Some of the partners had gambling addictions, went into debt and were alcoholics.

Five of the women in the sample were exposed to physical, emotional and/or sexual violence, and two of these women suffered the abused wife syndrome, having been victims of physical and emotional violence throughout their lives with their husbands. Emotionally, some of these women who committed murder felt continuously mistreated, stressed, frustrated, undervalued, and disappointed from life. They felt physically and emotionally abused, some of them were afraid and were under pressure to avoid family conflicts and fulfill their partner's needs, but at the same time they constantly nurtured the hope that their partner would change. One of the subjects revealed: *"He was an alcoholic; he drank almost every day. Quarrels, insults, beatings were frequent. When he was drunk, which was almost daily, he insulted me, hit me on my head with the ashtray, etc. We were longing for*

home. He never helped us. I was making everything with my sacrifices. I had him for nothing. I had two jobs, taking care of the family. I bought him cigarettes and took them to him when I finished one of the jobs, otherwise he would have made so much trouble. The children supported me when they grew up, but I never wanted them to have conflicts with their father. I forgive him, in order not to create disputes. I loved him and kept hoping that he would change, he is changing now, he will be changing then. Hope kept me. He didn't let me to separate, I was very afraid".

Abuse has been one of the substantial factors in aggravating the family situation and the crime committed. According to the USA National Institute of Justice (2003) the most common reason why a woman kills her partner is because she is being abused. Also, according to Leonard (2001) the abused women killed their abuser when they found themselves without any legal means to stop the violence against them. Leonard (2002) states that psychological abuse is more harmful than physical abuse.

5. Circumstances and motives of the crime

All crimes were committed at home, not in public spaces, and nearly 70% of the women used a weapon as a tool of committing murder (Table 1). According to some studies, firearms are the most common method, followed by knives (Mann, 1996). One of the women in this sample used an axe, while another used hot oil in the ear causing her husband's death.

The group of women who have had a long-term relationship with the victim (as shown in the findings of point 4 above) have been frustrated and abused by their partners in long-term and circumstances inciting the crime such as jealousy, loans taken by the partner and not consenting divorce have discharged the load that they have accumulated for a long time. The interviewed women had experienced intense dissatisfaction, as can be seen from their quotes below.

TABLE 2: Citations of women who commited intimate partner homicide

Subject	Citations of the women
A.	"My life is a drama. There was 29 years of suffering gathered in that cursed minute. I cried all day long from stress, my heart was hurted from my life, but still I was experiencing the same over and over".
B.	"For 5 minuta can happen the worst. I was a victim of spousal abuse which led me to this point. I was blown from an entire life. If I had a good husband, I wouldn' t be where I am today and I would be treated like a lady".

Although weak motives such as jealousy appeared in certain cases, other reasons that have left a mark on the woman who commits the murder may take more weight than the apparent motive. A. reveals about her husband's 17-year-old

girlfriend: *"He wanted to bring her home and I absolutely did not want him to bring her there, because for that flat I had poured my sweat. I didn't want him to bring her home, he could have gone somewhere else with her, but not there. I didn't want him to bring her to that flat which I had thought was for the children.*" In this case, in addition to the jealousy feeling, we think that the main reason was being left without a home again for herself and her children after many years of sacrifices.

The women of this sample who had short-term relations with the victim had committed the crime in other circumstances, such as the victim's physical attack on her, the discovery by her husband of her infidelity with a boyfriend.

6. Women feelings

In the last period before the murder, the women who were in a long-term relationship with the victim referred that they felt stressed, very tense and some of them had insomnia. The difficult economic situation aggravated women's state in some cases. One of the women says: *"he said to me go where you want. I felt like I didn't exist, like I was the most undervalued person in the world, that's how I was, I really was. He was provoking me in the last two weeks, I was stressed, I was down, morally hurt and insulted".*

The social systems that could have provided solutions to the problems of these women failed in some cases: A. had gone to the police office more than 50 times, many times she herself had withdrawn the complaint papers against her husband, but she warned the police office that she would kill him, not far off the act. She was divorced and later reunited and lived together with her ex-husband, because after the separation the children remained with their father as she was unable to financially support them. Subject B. stated that she had thought of separating but was too afraid. She talked about separation with her husband once when he was calm and sober and there was no discussion. He had reacted very badly. He threatened her and she was afraid of leaving him.

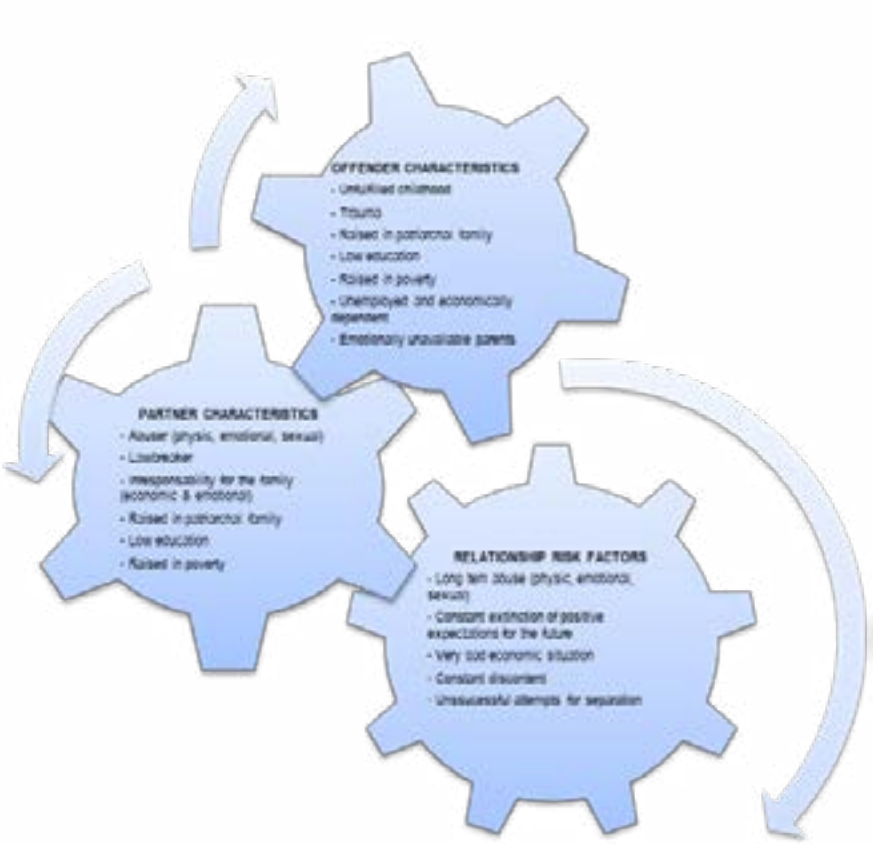
The interviewer noticed that in addition to remorse for the crime committed, these women had a desire to return to life again.

Conclusions

There is no single factor that is responsible for intimate partner killing. It turned out that there was an inciting circumstance of the crime which provoked the discharge in a final act of murder, but several hidden psychosocial factors, which interacted in a chain of events extending back from a triggering event to the women's child and youth development contributed to the murder. The diagram below shows

some common characteristics of the woman offender, her male partner and risk factors during their relationship.

DIAGRAM 1: Risk factors in intimate partner homocide



The women who killed their intimate partners shared some common characteristics. These women with unfulfilled childhood, raised in poverty, in patriarchal families, with low education, limited opportunities, unemployed in long term encountered partners who were abusive, law breakers, irresponsibility for the family and moved into an abusive relationship, in difficult economic situation, without a future and repeated extinction of hopes and positive future expectations. Caught in disputes, violence from their partner, the difficult economic situation, these women failed to find a solution. The systems they used to seek help failed. They did not have any emotional and economic support from the biological family of origin, social assistance, accommodation for them and the children, so even attempts of divorce failed. They remained chained to their unfortunate lives. Each of the above-

mentioned factors contributed to an aggravated psychological state, and one incident was enough to provoke the discharge and explosion of all life's complaints in the final extreme act, that of murder.

Our results agree with the findings of Jensen (2001) stating that women are more likely to commit murder when they are victimized, trapped by traditional expectations, and denied the resources to escape difficult family situations, which lead to despair and unavoidable and unbearable life situations. These are clear indicators that women are experiencing a low quality of life and murder represents its most serious extreme (Jensen, 2001). Jensen states that the woman's attack against human life can be seen as the result of the extreme of a spectrum which reflects the quality of the woman's life and her psychological well-being. At the other end of the spectrum, women would be free from domestic abuse, valued in private and public life, and free to fully express their human being.

Limitations of the study

This study did not aim to study the personality of women who committed the murder of their intimate partner, looking for personality disorders that may also come from innate temperament factors. We would encourage further studies in this direction. This study was focused on psychosocial factors, since while biological factors determine the aberrant personality structure, the environment can play a role in how the personality will be expressed as behavior. The number of the sample was small, representing case report series.

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"Midsommar": Unraveling the impact of early-life trauma through art

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Introduction

The concept of "Trauma" is very popular, even among those who are unfamiliar with most psychological concepts. Although definitions may vary, the term usually refers to an experience or event, that causes distress on the person, to the point that it impacts their ability to cope and function, and can also cause intense psychological and emotional reactions, affecting their wellbeing (APA,2013). Trauma, including one-time events, but not limited to, not only leaves long lasting and repetitive effects on the survivor, but also affects everyone differently. According to the nature and type of trauma, and how it correlates with the personality of the individual who has experienced it, the way those effects manifest can be obvious, and can clearly impact cognitive functioning, in a way that we can clearly measure and diagnose it as Post Traumatic Stress Disorder (PTSD). However, trauma, might also be subtle and quiet, in cases where the symptoms do not specifically fall under the diagnostic criteria checklist, since these effects might be insidious, can be easily overlooked and, in turn, become destructive for the individual experiencing them (SAMHSA, 2014).

The immediate reactions following the traumatic event are usually quite complicated and are shaped by the survivors' personal experiences, their ability to

get support, as well as their coping and life skills. Post-traumatic reactions, even the most acute ones, would be considered normal, considering that these reactions are results of what should be considered abnormal situations, and their sole purpose is to manage what remains of the trauma in the survivors' psyche. These coping styles can vary in intensity and approach. Some individuals may be more action oriented and tend to face the issue head on and reflect on it, while others might have overactive emotions, which in turn can become difficult to manage, since they impact the way the trauma survivor thinks, acts, how they perceive themselves and how they relate to the outer world (SAMHSA, 2014).

It is important to emphasize that there is no wrong coping style. Depending on whether the individual who experienced a traumatic event decides to speak about the trauma or not, the coping style might be identified. However, regarding their mental health, it does not make a major difference on the way that they internally process these symptoms (SAMHSA, 2014).

As far as traumatic events go, death, especially when it is sudden, might be one of the most impactful in a person's psychological well being. When confronted with the loss of a loved one or becoming a witness to a tragic event, trauma takes root within the human psyche, leaving a mark that can alter the course of one's life. Especially the death of someone close, whether sudden or expected, often shatters the sense of security, and exposes the fragility of existence. This rupture in the natural order of life can leave survivors grappling with overwhelming grief, guilt, or a profound sense of emptiness. Trauma emerges as a relentless companion, by replaying the scenes of loss, triggering emotional turmoil, and challenging one's ability to find meaning and purpose. The journey of healing from such trauma can be arduous, requiring resilience, support, and a willingness to confront the pain, without getting stuck in it (Lawrence, 2019).

Most people do have a neurotic view on death, especially since it goes against what human beings generally strive for, which would be values such as beauty, youth, achievement, or progress. These values would be considered the essence of what we try to accomplish during our lives, especially considering the individualistic culture most western societies (and not only) have ingrained in the mass population. Confronting the inevitability of death, whether it's regarding someone close to us, or even our own imminent death seems to bring out certain neurotic traits in us such as anxiety, depression, or hypochondria. Despite the fact that most people are in denial when it comes to death, (probably due to the fact that this might be a survival mechanism which tries to ensure our existence and making us weary of threats that might risk the continuation of our lives), its inevitability manifests itself in all of us, in different ways according to the specific circumstances that we might encounter and that make us aware of the absolute nature of death (Lawrence, 2019).

Fear of death, in its essence, would be fear of the unknown, since it is impossible for the human mind to comprehend it, because that same mind attempting to understand what it would be like to not exist, would not be able to think in that scenario due to it's lack of existence, and in our attempts to do so we still remain spectators and assist in creating the scenario, in which we are required to be non-present. Therefore, we can be aware of the fact that no one is conscious about their own death because there is no way for us to experience a moment where we do not exist (Freud, 1915). When we claim that we fear death, we may, in fact, be afraid of concepts related to death that impact our *life*, things such as abandonment, unresolved conflicts, or the outcome of a sense of guilt.

When it comes to the death of someone else, we are usually cautious when mentioning it, almost adding a sense of admiration, at best, regarding the deceased. There has always been a tendency to celebrate our heroes' deaths, by putting a special meaning to it, or a general inclination towards treating the dead and the memory of them with a sense of heightened respect, that usually we do not direct towards the living. As a reaction to this, man has created forms of existence such as spirits or ghosts, and also concepts such as afterlife or reincarnation, in honor of the memory of those who have passed away, since death has usually been considered the worst event to happen in someone's life and the living have always assumed that lack of existence cannot exist, or it might immediately turn to a different kind of existence, be it spiritual of physical (Freud, 1915).

Considering that, to our current knowledge, the dead are incapable to become any of these concepts, and they certainly have never spoken to us about the events that happen once their vitals stop functioning, it is safe to assume that death folklore, which is present in all societies and cultures, is a collective way of coping with grief. Grief can be defined as the psychological response following the experience of a significant loss, event which would usually be the death of a close and intimate personal relationship (APA, 2020). It includes several psychological responses such as distress, separation anxiety, confusion, or an inability to stop reminiscing on the memories of the person who is no longer in our life. It may include remorse or sorrow, regret, in some cases, and, in the most severe cases of grief, it can become life threatening due to the immense amounts of stress which may cause a disruption of the immune system, personal neglect or even suicidal thoughts.

Grief is a deeply personal experience, shaped by various theoretical frameworks and concepts. Freud's 'grief work' theory highlights the process of breaking ties with the deceased and building new relationships. Kübler-Ross's 'stage theory' suggests that grief follows a series of predictable stages, including shock, denial, anger, guilt, depression, and acceptance. Stroebe and Schut's' dual-process model' emphasizes the oscillation between emotion-focused and problem-focused coping

in the grieving process. Bonanno et al. (2004) explores the associations between chronic grief, pre-loss dependency, and resilience with pre-loss acceptance of death. Neimeyer and Sands (2011) emphasize the importance of constructing meaning in grief. Hall's proposition of 'post-traumatic' growth suggests that loss can lead to life-enhancing transformations. Additionally, the concept of anticipatory grief, experienced before a loss occurs, is questioned in terms of its impact on bereavement. Considering the numerous theories that we have on grief, and despite the complications that arise when attempting to understand it, they all share a common ground by stating that it is characterized by profound emotions and thoughts related to the deceased, with various predictors contributing to its development (Hamilton, 2016).

A quantitative study in 2018, by a group of researchers from several psychology research centers, decided to examine the impact of individuals' memories of being aware of death during their early ears of development on their coping abilities with losses during both childhood and adulthood. Participants emphasized the importance of communication about death, particularly during childhood, and expressed a desire to have had more conversations about their losses with others and wished for greater communication from their parents. Participants also wanted more guidance on adaptive grieving processes and more information about rituals and ceremonies surrounding death (Martinčeková, Jiang, Adams, Menendez, Hernandez, Barber & Rosengren, 2018) Regarding emotional support, participants felt dissatisfied with the level of support they received while coping with a loss, while the theme of age-related issues highlighted the perception that children might be too young to understand and effectively cope with death. Some respondents described feeling too young at the time of a loss, while others acknowledged that with age, they gained a better understanding of death's implications. The responses suggested that the participants believed children might not fully comprehend the gravity of death. Overall, the findings of this study suggested that open conversations about death and better emotional support systems can positively impact individuals' coping abilities with death-related events throughout their lives. Especially, those who recalled their parents being more open about death-related matters demonstrated improved coping skills in both their childhood and adult years. These findings underscore the potential advantages of introducing children to discussions about death and how it can positively influence their ability to cope with death-related experiences.

Grief, death, and trauma are intricately interwoven phenomena within the realm of the human condition, forming a complexity of interconnected experiences. The event of losing a significant individual through death confronts us with a profound emotional void, and in the wake of this bereavement, the intricate process of grief is set in motion. Bereavement-induced grief, however, can be further compounded

by the emergence of trauma resulting from the deeply distressing emotional impact of loss, which can leave indelible imprints on the psychological landscape, complicating the navigation of grief and its associated emotions.

Within the confines of art's mirrored surface, we encounter reflections of early-life trauma that resonate with our collective human experience. As viewers, we gaze into these artworks and find ourselves drawn into a mesmerizing dance between the artist's personal pain and our shared human empathy, where emotional turmoil and vulnerability merge together, to give us a full picture of the universal nature of human suffering. Within these reflections, we are able to discover a profound interconnectedness—a reminder that, beneath the surface of individual stories, humans are bound together by their shared emotions. Considering this, all forms of art would enable us to unravel the impact of early trauma in human life, relating it to each one of us, by tapping into universal feelings and experiences.

The present paper explores the critically acclaimed film, "Midsommar," directed by Ari Aster, to unravel the intricate interplay between trauma and human psyche in a captivating narrative, set against the backdrop of a Swedish midsummer festival.

"Midsommar": Mapping theoretical concepts into movie analysis

Drawing from psychoanalytic and trauma theoretical frameworks, the present analysis provides a discourse of the film's portrayal of trauma as a potent force that shapes the characters' emotional landscapes, unveils their vulnerabilities, and exposes the disturbing rituals of a seemingly idyllic community. Navigating through the film's surreal imagery, the audience delves into the transformative power of trauma, examining how unresolved grief and pain can manifest in haunting ways, challenging the façade of joyous festivities with darker undercurrents, scrutinizing the effects of trauma on the human psyche, illuminating the ways in which unresolved grief and pain intertwine with the film's idyllic and eerie settings, and ultimately creating an unsettling tapestry of human experience.

"Midsommar" (2019), a cinematic tour de force helmed by Ari Aster, invites audiences on a gripping journey into the enigmatic world of Swedish midsummer celebrations. Set amidst the picturesque landscapes of rural Sweden, the film introduces the audience to Dani, a young woman grappling with the recent loss of her family in a tragic incident, caused by her sister, who was suffering from bipolar disorder. Haunted by grief and struggling to cope with her emotional turmoil, Dani seeks solace in her emotionally distant boyfriend, Christian, and their group of friends. All five of them take off to celebrate mid-summer in Sweden, in a pagan community, which was home to one of Christian's friends, and participate in their traditional celebrations (Aster, 2019).

The way events are conveyed primarily takes place through Dani's perspective, and the viewer gets the impression that they, in fact, are foreigners visiting the community. This significantly reinforces the immersive nature of the film, blurring the boundary between reality and the movie screen, thus eliciting authentic and intense emotions inside the viewer that linger for hours after the film's conclusion, evoking a sense of shock and awe. It becomes challenging to distinguish that the events are being witnessed through a screen, as the audience is drawn deeply into the narrative. As one of the outsiders in this enigmatic Swedish community, the viewer experiences the unsettling customs and rituals alongside the characters, resulting in a profound sense of unease and curiosity.

The storytelling and visual artistry heighten the impact of Dani's perspective, making the audience an integral part of the immersive experience. The blending of reality and fiction in this manner leads to a strong emotional resonance and makes it easy to identify with the main character and her experiences (Chang, 2019). The film's ability to create such an authentic connection allows the viewers to internalize the characters' emotions, mirroring their fear, confusion, and vulnerability (Bradshaw, 2019).

Psychoanalytic principles permeate the film, as each character represents a unique facet of the human psyche grappling with internal conflicts. Dani's vulnerability and profound sense of loss resonate with viewers, serving as a catalyst for introspection into the complexities of trauma. Her emotional fragility is poignantly depicted in a scene at the beginning of the movie, where she tearfully pleads for Christian's support, only to receive cold detachment and emotional manipulation in return, further exacerbating her feelings of isolation. Such moments exemplify the impact of repressed emotions and the desperate need for connection in the face of trauma, and by not receiving it, Dani is pushed further towards her chaotic, irrepressible pain, having to face it alone.

As the film progresses, it becomes apparent that "Midsommar" is more than just a story made of mysterious rituals. Rather, it is an intricate exploration of trauma and its profound impact on the human psyche. Trauma, as depicted in "Midsommar," emerges as a pervasive theme that drives the plot and character development. The film portrays the characters as haunted by repressed memories and unresolved traumas from their past. The protagonist, Dani, played by Florence Pugh, experiences profound emotional upheaval after the personal tragedy she was currently dealing with, thereby setting the tone for her psychological healing journey. Additionally, her boyfriend, Christian, along with their friends, reveal their own psychological vulnerabilities, all of which become increasingly exposed as the story unfolds amidst the enigmatic midsummer festivities.

Upon their arrival in Sweden, the characters in "Midsommar" are welcomed with an enchanting yet sinister ambiance. The idyllic rural landscapes of the

Scandinavian countryside, adorned with vibrant floral arrangements, serve as an enticing facade for the impending unsettling events. For Dani, the journey to Sweden marks a pivotal moment as she seeks solace amidst her profound grief. As the group joins the midsummer festivities, their initial enthusiasm gradually gives way to a sense of unease, as they encounter peculiar rituals and traditions deeply entrenched in the community's history. Ari Aster masterfully employs symbolism and visual cues to foreshadow the transformative power of the after-effects of trauma, setting the stage for an exploration of the human psyche and the haunting manifestations that lie beneath the sunlit surface.

Aster's mastery lies in his ability to employ visual cues and symbolism to expose the characters' psychological vulnerabilities. The use of floral imagery, a recurrent motif throughout the film, serves as a metaphor for personal growth, life cycles, and death. In one scene, Dani's emotional catharsis coincides with the vibrant display of flowers, representing the emergence of resilience amidst personal tragedy. Except the flowers, the film is rich in symbolism, which delves into the characters' subconscious experiences, but also speaks to the audience about events and emotions beyond it, leaving it open to interpretation, one of the essential qualities of "Midsommar," transcending the concepts of time and place.

One of the primary symbols seen throughout the film is mirrors. According to Jung, mirrors are symbols of self-reflection but also of alienation from society, as they are closely associated with the Shadow and shedding social masks (Caputo, 2013). In a spiritual aspect, mirrors are also linked to parallel worlds and are treated as portals, especially in art, as exemplified in Lewis Carroll's book "Through the Looking-Glass," where the main character crosses through a mirror into another dimension. Though mirrors appear consistently throughout the movie, three key moments stand out in their symbolic use. Firstly, in a scene where Dani confronts Christian about why he had not informed her about the trip to Sweden, the camera focuses on Dani, while Christian is only seen through his reflection in the mirror. In this scene, the mirror symbolizes the detachment between the two, despite the closeness their relationship is supposed to have, existing in separate emotional worlds. The use of mirrors here is akin to the moment when Christian reveals to his friends that Dani will be joining the trip, and his reflection is similarly emphasized. In both scenes, Christian evades direct confrontation with the issues at hand, and his character is portrayed through his fear of making decisions, further emphasizing the sense of avoidance and discomfort he experiences in these moments. Thus, the film compels us to witness his unlikable side. The fact that he never focuses on the mirrors in either scene indicates his avoidant attachment and his fear of confrontation.

The second scene would be when the five characters head towards Harga, where the view is turned upside down, with the sky seen below and the road above, as

though the road were a mirror itself. This is a classic art trope where the mirror serves as a passage to parallel worlds, symbolizing the inversion of reality that Dani (and the audience) experiences, entering another society where the cycle of life and collective consciousness is vastly different from what they are accustomed to. To further emphasize this feeling, when they walk toward the woods, they pass through a pathway where trees form a circle, signifying their passage through a portal.

The third moment is when Dani, under the influence of hallucinogens, finds herself in a dark room and catches a glimpse of her reflection, but quickly rushes away into the woods. In this scene, Dani is shown she has to confront her trauma, a perspective reinforced by the surrounding darkness, but she is not yet ready to face it head on, and therefore retreating to avoid confrontation with herself, since she has not yet found a safe way to let herself become aware and express these emotions.

Another symbol, present throughout the film, would be "The Bear", which can also be related to trauma, as it serves as a powerful metaphor for the characters' psychological and emotional experiences. The bear represents the trauma that the characters carry within themselves, and its presence throughout the film embodies the haunting effects of past wounds and unresolved pain.Trauma, much like the bear, can be a dormant force, seemingly harmless and subdued until triggered or confronted. Starting with a painting in Dani's room depicting a little girl seemingly unafraid of it. This foreshadows Dani's encounter with trauma, as she is initially portrayed as someone trying to be strong and resilient in the face of personal tragedy, attempting to suppress her grief and pain. As the story unfolds, the bear becomes more prominent in the rituals and symbolism of the Harga community. It is burned inside a wooden structure, representing the culmination of its symbolic significance. This burning of the bear parallels the characters' journey of facing and processing their traumas, as the act of burning the bear happens right after Dani is ready to start her new life free of her emotional baggage.

In Norse mythology, the bear represents the masculine aspect of human consciousness, due to several myths where Norse Gods descend to Earth in the form of bears. In this context, masculinity would represent qualities such as courage, manliness, loyalty, and sacrifice, traits lacking in Christian, who is supposed to be the masculine counterpart of Dani's feminine. According to Norse mythology, males who did not adhere to these principles were considered traitors and were sentenced to death.

The bear's association with the character Christian also adds a layer of meaning to the trauma symbolism. Christian's death inside the bear's skin symbolizes the consequences of his toxic behavior and Dani getting rid of the weight of her emotional baggage. His death through the bear ritual can be seen as a metaphorical

cleansing of his negative impact towards her, and considering it was Dani the one who ordered the sacrifice, it leads to an understanding that, in the end, she was finally ready to clear the consequences of trauma in her life. Overall, the bear symbolism in "Midsommar" serves as a potent representation of trauma, lurking in the background and occasionally rearing its head to affect the characters' emotional and psychological states. It highlights the need for individuals to confront and process their traumas, or else risk being consumed by them, much like the bear's destructive presence.

Dani's dream is also another major plot point full of symbolism, regarding the effects of trauma in her psyche, and hints at the psychoanalytical concepts Ari Aster has implemented throughout the movie. The dream that Dani has on her first night in Harga is filled with symbolism related to her emotional state. Initially, the fact that her four companions leave in a car, deliberately leaving her behind, and Mark's mocking expression reveal her fear of abandonment, Christian's neglect towards her, and the indifference they all show towards her overwhelming pain. These feelings of fear and abandonment stem from her subconscious fear of being left alone, as she grapples with the recent loss of her family in a tragic accident. The dream also captures her feelings of neglect and insignificance, as she is seemingly forgotten and left behind by those she thought were close to her, and can be a representation of her waking life, in which her boyfriend deliberately tends to neglect, manipulate and undermine her.

As Dani opens her mouth to speak, darkness pours out of it, filling the entire screen before she wakes up. The darkness symbolizes the emotional turmoil and pain that Dani carries within herself. It represents the overwhelming grief and sadness that she has been trying to suppress and avoid since her family's death. The act of opening her mouth could indicate her desire to express her emotions, but the darkness flowing out may suggest her difficulty in vocalizing her pain or feeling heard and understood by others, especially since her trauma is still unprocessed at this point of the narrative. Since she has not yet dealt internally with everything that has happened, she still experiences feelings of pain and shock every time she is reminded of her personal tragedy.

Overall, Dani's dream in "Midsommar" serves as a psychological snapshot of her innermost fears, insecurities, and desires. It exposes the internal conflicts she grapples with, stemming from her traumatic past and the need to confront and process her grief. The dream acts as a bridge between her conscious and subconscious mind, allowing the audience to delve deeper into her emotional journey throughout the film. Dani's journey can be an almost perfectly realistic representation of the stages of overcoming trauma, as it serves as a profound exploration of how she navigates her past traumatic experiences and seeks healing and transformation within the enigmatic world of the Harga community.

Throughout the film, we witness her emotional state and the ways in which her trauma impacts her behavior, relationships, and ultimately, her path towards catharsis and recovery.

Throughout the film, Dani grapples with her toxic relationship with her boyfriend, Christian, who is emotionally distant, selfish, and reluctant to support her during her vulnerable moments. Their relationship becomes a microcosm of the unresolved trauma, by also adding its own flare to her mental and emotional issues, since she is aware of how he is treating her and yet, she still hopes things will get better, since she tends to think of herself as "too much" and blame herself, not him or his lack of interest towards her, for the disconnect in their relationship. As she confronts Christian's infidelity and lack of empathy, she begins to realize the toxicity of their connection, contributing to her emotional turmoil and slowing down her healing process.

Dani's decision to join her friends on the trip to Sweden is an attempt to escape her traumatic past and seek solace in their company. However, upon arriving in Harga, she finds herself in an entirely different world, one that challenges her perceptions and emotions. But considering that her perception on life was already altered due to her trauma, it is exactly why it was so easy for her to fit in within the community and to leave her old life behind; because, at this point, it seemed there was no life to leave behind at all.

The empathetic and supportive treatment she gets from the Harga community allows her to confront her trauma directly, especially since all their rituals were collectivist, and she finally felt like she was heard and accepted. We can notice this in the scene, after she was crowned as "May Queen" and found Christian cheating, where she and the other girls cried and screamed in unison. She was offered a different way to process her emotions and gradually shed the weight of her past trauma, by sharing it with the group. The Harga members shared her grief, providing a sense of collective support that contrasts sharply with the isolation she felt back home and in her group of friends. The May Queen ceremony becomes a turning point for Dani. As she is crowned "May Queen", she is utterly transformed, embracing her newfound sense of, not only belonging, but being appreciated, valued and the center of attention, which is something she had needed for a long time and yet hadn't received. The catharsis she experiences during the dance symbolizes the release of her repressed emotions and a sense of liberation from her trauma. And, towards the end, the burning of Christian inside the bear skin further represents her final step towards severing ties with her past life and pain, and therefore reclaiming her strength and autonomy.

The film concludes with Dani choosing to stay within the Harga community, leaving the audience with an ambiguous ending. Her decision can be interpreted as both an escape from her past trauma and a chance to create a new life, where

death, the root of her trauma, is celebrated, instead of demonized (Laffly, 2019). The ending makes us contemplate the complexity of trauma recovery and the ways in which individuals may find healing and transformation in unexpected places, even those that seem disturbing at first.

Conclusion

Even though death and loss, and the aftermath of it, are normal and unavoidable parts of life, when death is unexpected, such as with suicide, there can be an overlap of the traumatic experience and the grief experienced, that can become overwhelming. In some cases, people get stuck in their grief, and they either cannot or do not want to get better, since traumatic grief can be the only string left connecting them to their loved one.

Due to the comorbidity of trauma and grief, it can become hard to make a distinction between grief, PTSD, and traumatic grief; however, the main difference is that grief is about loss and PTSD is about fear, while traumatic grief incorporates elements of both. Traumatic grief can have symptoms such as distressing thoughts or dreams, hyperarousal, or anhedonia, and can be easily confused with depression. What makes a loss traumatic is not only the way the person died, which, in "Midsommar" would be the murder-suicide, but also the meaning we attach to death, and the way we perceive it.

Overcoming trauma, especially related to grief, takes a lot of time and inner work, but it can also be the catalyst for a renewed sense of meaning (APA, 2020), which is portrayed in "Midsommar" through Dani joining the Harga community at the end, that offers a new purpose and direction to life. There are ways to work on overcoming trauma, though; ways that do not include joining a cult that sacrifices their elders to pagan Gods at the age of 72. Talking about the traumatic event would be one of them. It is important to have a support system that not only understands what happens and gives emotional support, but also helps in gaining a new perspective on the event and the way trauma is being handled (APA, 2020). Accepting your feelings, without any judgement, also helps, because by acknowledging that negative and complicated emotions are normal in these types of situations, it can serve as a reminder that these feelings are a normal reaction in an abnormal situation. The sooner the negative feelings are accepted, the sooner the weight of trauma will be lifted (APA, 2020). Other ways to help in overcoming trauma and grief would be, by being part of a social group, which did seem to work for Dani, and taking care of both self and the group; asking for help, or giving help to people in similar situations, in order to give trauma a purpose; and attempting to remember the people who we've lost in a positive light, which can shift our perspective and change the narrative we tell ourselves (APA, 2020).

In conclusion, art possesses a unique and powerful ability to depict trauma in its rawest form, transcending the boundaries of language and allowing audiences to confront the darkest recesses of the human psyche. Throughout history, artists have utilized their creative talents to explore the complexities of suffering, offering glimpses into the depths of trauma and its profound impact on individuals and societies alike.

"Midsommar" unfolds as a chilling tale of a disintegrating relationship and a group of friends' encounter with a sinister Swedish commune during its midsummer festival. From the very beginning, the film introduces us to Dani, the protagonist, who experiences an unimaginable tragedy in her life, and as the story unfolds, the film delves deep into the emotional upheavals caused by grief and loss. In doing so, "Midsommar" expertly captures the nuances of trauma, portraying its impact on Dani's psyche and the intricate dynamics of her relationships.

Throughout the film, viewers are forced to confront the uncomfortable reality that trauma can manifest in various ways, from the subtlest shifts in behavior to full-blown psychological disintegration. "Midsommar" deftly explores the communal aspect of trauma, emphasizing the collective nature of human suffering. In witnessing the characters' struggles, the audience is reminded of the universal nature of trauma, as it affects not only individuals but also those connected to them.

Art, including "Midsommar," acts as a cathartic medium for both its creators and audiences. For artists, the process of crafting such emotionally charged narratives can be a means of grappling with their own experiences and emotions. Through their work, they offer a window into their psyches, inviting viewers to explore the intricacies of trauma alongside them, while, for audiences, experiencing art that confronts trauma can be both unsettling and therapeutic. It allows them to confront their own suppressed emotions and encourages empathy towards those who have endured similar hardships.

In essence, "Midsommar" stands as a powerful testament to the transformative power of art in its depiction of trauma. By utilizing mesmerizing visuals, intricate storytelling, and powerful symbolism, the film opens a gateway to the human condition, where the darkest aspects of life converge with moments of transcendence and self-discovery. As we bear witness to this haunting exploration, we are reminded of the redemptive potential that art holds, offering a profound sense of understanding and empathy, even amidst the most distressing circumstances. Through "Midsommar," we are reminded that art can be a guiding light in the darkness, illuminating the depths of trauma with a glimmer of hope for healing and growth.

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Effects of a 6-Month Resistance Training Program on Overweight Children

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Abstract

School-age children's health may be improved through physical education programs that include resistance training. Obesity in children has been linked to health issues like type II diabetes and hypertension. Designing and implementing efficient and useful therapies for the management of overweight children and who are prone to experiencing medical issues is a serious concern. Adults who are overweight generally embrace resistance training as a safe and efficient way to lose weight. Therefore, the aim of our study was to look into the effects of a 6-month resistance training program in overweight or obese children. Fifty children (n = 28 girls and 22 boys; mean age = 7.38 years) took part in a six-month periodical resistance training program 2 days per week. Body mass index (BMI), strength, anthropometric measures, and activity levels of subjects were assessed prior to and following the training program. No training injuries or severe muscular pain were reported at any point of the exercise regimen, although the individuals did experience substantial variations in height, weight, body mass index, and total fat mass. Substantial increases occurred in 1-rep maximal squat (72%), number of push-ups (80%), countermovement jump (10%), static jump (9%). Although it is likely that some of the observed changes were the result of growth

and maturation throughout the course of the research period, the data show that the resistance training program induced large and persistent increases in body mass index, measures of strength, and body fat. These findings indicate that the participants training program was well received by the participants and had a significant impact on their body mass index and strength. In youngsters who are overweight or obese, a periodic undulation program enhances strength, decreases body fat percentage, provides variety, and notably increases lean body mass.

***Key Words**: - School-age children, obesity, physical activity, BMI*

Introduction

Recent research has found that adequate levels of physical activity (PA) reduce vulnerability to a number of illnesses (such as type 2 diabetes and heart diseases) and help to build the musculoskeletal system, cardiovascular system, and neuromuscular awareness. These benefits of PA on children's health and wellbeing are well established (Chief Medical Office, 2019). Regular involvement in physical exercises has the potential to increase the child's emotional, social, and cognitive well-being (Faigenbaum et al., 2014). Obesity is one of the most common outcomes of not being physically active enough. Childhood obesity is linked to an increased risk of adult obesity, untimely mortality, and disability. Obese children have difficulty breathing, are more prone to fracture, have hypertension, show first signs of cardiovascular diseases at an early age, have insulin resistance, and significant psychological consequences, in addition to other potential (Di Cesare et al., 2019). Hills et al. (2011) observed that because of the increased likelihood of overweight kids becoming obese adults, engaging young people in physical exercise is a critical component in preventing obesity. The increasing rise in the frequency of childhood obesity has generated a multidisciplinary discussion on the best ways to combat this epidemic. While no agreement has been reached, it is probable that preventative initiatives will take precedence, with programs that can reach all children at an early age.

Obesity is caused by a complex etiology in both children and adults. Obesity in children and accompanying metabolic issues are linked to lack of physical exercise, excessive sedentary time, and improper eating habits, all of which contribute to an unhealthy lifestyle. Primary prevention programs, which are frequently centered on interventions in schools, emphasize the benefits of physical exercise and healthy food habits. These broad population strategies are beneficial in avoiding excess body fat buildup and promoting physical fitness in children. Obese children, on the other hand, may require more organized programming.

The majority of research so far have demonstrated that increasing physical activity while decreasing calorie consumption will improve body composition and health in overweight or obese children. Until recently, physical activity programs have been mostly oriented on endurance exercise, either alone or in combination with nutritional management, and weight training has just lately acquired popularity. Endurance exercise, often known as aerobic exercise, is defined as activity that is conducted over a long period at a low to moderate intensity and depends mostly on aerobic metabolism. Resistance exercise, commonly known as strength training or weightlifting, includes muscular strength and primarily consists of isometric, isotonic, or isokinetic movements. Resistance training is intended to increase resistance in order to increase muscular strength and anaerobic endurance. According to the concept of energy balance, when energy intake exceeds energy expended, weight gain occurs. As a result, promoting physical activity in children and adolescents is seen as a strategic approach to treating childhood obesity (Valerio et al., 2018), physical activity patterns that form in childhood and persist into maturity. Economy is expanding in developing countries, which among other things, is giving way to significant alterations to the traditional eating patterns, and reorienting the diet towards Western countries. Eventually, these changes have contributed to increased obesity levels. With infectious diseases associated with malnutrition, middle-income countries typically face an additional cost of disease as a result of the so-called nutritional shift, particularly among in obese children or those suffering from chronic diseases associated with obesity (Popkin & Adair, 2012).

Childhood eating and physical activity patterns are not easily altered during life. As a result, preventing and limiting the increase of among children, is an urgent public health priority nowadays as it is very challenging to cure obesity, the likelihood of becoming obese as a teenager or at an older age is elevated, and it is tough to kick off unhealthy eating habits developed as children (Pearson & Biddle, 2011).

The majority of empirical investigations have revealed that increased physical activity paired with diet contributes to enhance the body composition and general well-being of obese or overweight children. However, because overweight and obese children have increased levels of body fat mass as compared to non-obese children, most exercise regimens that involve aerobic training may not be tolerated by them (Watts et al 2005). Despite substantial research on the involvement of parents and schools in the prevention of children obesity, the use of resistance training to change body composition in this group is a relatively recent notion that deserves additional investigation (Benson et al., 2008), (Falk et al., 2003). Resistance exercise is well established to be safe for younger populations (Faigenbaum et al., 2001), (Faigenbaum et al., 2003), (Faigenbaum et al., 1999), but research investigating its

impact on obese children is relatively scarce (Benson et al., 2008), (Sothern et al., 1999), (Treuth et al., 1998). Because of the growing popularity of young people participating in resistance training, as well as the increased prevalence of obesity levels among children, more studies are necessary be conducted in order to assess in the long run the benefits of resistance training on the well-being and physical fitness of obese children, especially concerning the time span of the intervention necessary to trigger change. Because there is insufficient data on young people, it is especially relevant to know whether these training-induced effects may be sustained throughout a period of detraining in this population (Tsolakis et al., 2004).

Material & methods

The sample consisted of fifty schoolchildren (28 girls and 22 boys) with an average BMI of 21.4 kg/m2. Besides obtaining official authorization from the school's Ethics Committee, parents or legal guardians supplied written informed permission. The purpose was to look at the impact of a 6-month resistance training in overweight or obese children, as well as to determine how long the advantages last after organized exercise regimens are discontinued.

The following were the inclusion criteria: 1) age from 7 to 8 years, 2) obese or overweight, 3) sedentary children, while the exclusion criteria were: 1) nephropathy or hypertension, 2) usage of any medicine to regulate weight, hyperglycemia, or blood pressure, and 3) self-reported frequent physical activity in addition to curricular physical education.

Prior to and following the exercise regimen, subjects' BMI, strength, power, and activity levels were assessed. Before testing and training started, the subjects were acquainted with the measurement and exercise protocols. They were also instructed to keep track of any substantial physical activity they did during the training period, including the kind, duration, and intensity (as measured by the rate of perceived exertion [RPE]). At weeks 0, 4, and 6, activity data were examined to keep track of significant shifts in activity levels. At these stages, participants were also subjected to anthropometric measures of height and weight performed in accordance with standard protocols. Height was measured using a wall-mounted audiometer to the closest millimeter, with children wearing light clothing and no shoes. Fat folds were measured using a picometer in four tissues (triceps, suprailiac, suprascapular, and pulp muscles). All anthropometric measurements were taken by the same person. A machine squat exercise was used to evaluate maximum lower body strength. Warm-up tests were performed using 25% (8–10 repetitions), 45% (4–6 repetitions), 80% (2–4 repetitions), and 90% (1 repetition) of each subject's

estimated 1-repetition maximum (1RM). The load was then increased to a point at which the child had 2–3 maximal efforts to determine the 1RM, with adequate rest allowed between trials (5 minutes). Earlier studies have demonstrated that 1RM strength testing may be performed safely by children if adequate protocols are followed (Faigenbaum et al. 2003).

The exercise regimen comprised complete body training employing a variety of varied body weight and strength exercises, along with various types of training gears such as dumbbells, elastic bands, medicine balls, and weight bags. The regimen involved training with varied workloads across each week as well as increased intensity over 6 months. Every week, the first exercise session involved 3 sets of 4 exercises each. Moderate 10RM strength, exercises used included squats, lunges, push-ups and sit-ups. The second session included high-volume training sessions, with three sets of squats, straight leg raises, static jumps and abdominal crunches performed using 10-12RM. The third included moderate to high-intensity training sessions including explosive power exercises; three sets each with body reps of squat jumps, countermovement jumps (CMJs), jumping jacks and jumping lunges were performed using training loads of 3 to 5 repetitions.

TABLE 1. Training Program

Training Program						
Day	Order	Exercise	Set	Min Reps	Max Reps	Min Rest
1	1	Squat	3	8	10	90s
	2	Lunges	3	8	10	90s
	3	Push-ups	3	8	10	90s
	4	Abdominal sit-ups	3	12	15	90s
2	1	Squat	3	10	12	60s
	2	Strait leg raise	3	10	12	60s
	3	Static jump	3	10	12	60s
	4	Abdominal crunch	3	12	15	60s
3	1	Squat jump	3	5	7	3 min
	2	Countermovement Jump	3	3	5	3 min
	3	Jumping jacks	3	5	7	3 min
	4	Jumping lunges	3	5	7	3 min

Results

There were no reports of physical injuries or significant muscular pain at any point of the training program. Compliance with training was 79 $\pm$ 6%. Initially, 73 children enrolled in the study, but 23 withdrew before the end of 6 months. Figure 1 depicts shifts in the mean body weight throughout time.

FIGURE 1. Changes in mean body weight

No substantial reduction in absolute percentage body weight of 2.6% (p = 0.003) was observed. Table 2 shows the prior to and following values for various body weight measurements.

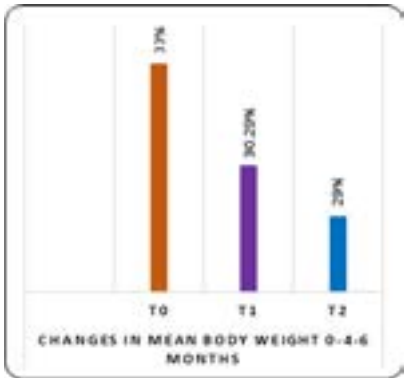


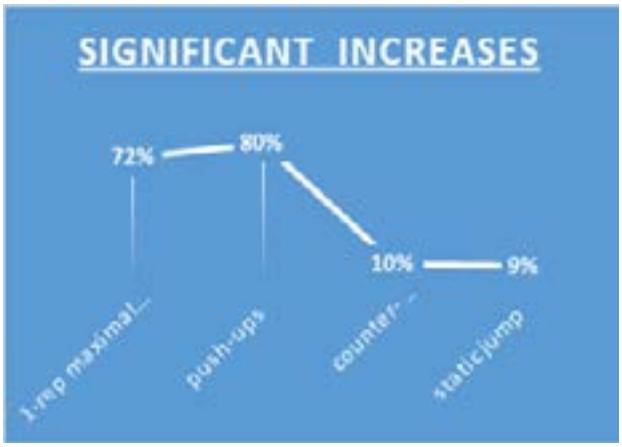
TABLE 2. Measures of body weight (0-4-6 months)

There were significant increases in the 1-rep maximal squat (72%), number of push-ups (80%), countermovement jump (10%), and static jump (9%), as shown in Figure 2.

T0/kg	T1/kg	T2/kg
37	35	33.2
42.2	40	38
35.4	34	33
30.2	29	27.3
25.4	24	22
30.3	28.5	26
27.6	27	25
36	34	33

38.1	37	36
38.3	37	35.8
33.6	32	31
31	30	28.6
26	24	23
27.4	25	24
40.6	38	37
28	26.5	26
31	28.5	28
27.6	24	23
30	27.5	26.3
42.5	40	28
31.5	30	29
40.6	38.6	38
29.3	28	27
34.3	33	32
26	24	22
25.7	23	21
27.8	26	25.5
33	31.4	31
33.2	30	29
29.2	27.3	27
34	32	31
30.4	28	26
32.4	30	29
45	42	41.2
30	28.3	28
29.3	27	26
40	37	36.4
27.3	26.3	26
26	24	23
25.7	23	22
32	30	28
32.5	31	30
33	32.3	32
27.8	25	24
28	26	25
26.8	24	23
29.7	26	25
37	35	34
39	37.3	37
40	38.2	38

FIGURE 2. Increases in the number of repetitions, push-ups, countermovement jumps and static jumps



Discussion

This study looked at impact of three different lengths of a resistance training intervention on body mass index, strength, power, and body fat in overweight or obese children. Benson and colleagues discovered similar results (Benson et al 2008). In recent years, the teaching process at educational institutions has been oriented toward non-linear pedagogy. Such education promotes significant student autonomy as well as the utilization of research aimed at the advancement of an academic subject. Physical Education is no different, since it aims not only at the physical perfection of the child but also at the development of numerous abilities required for daily living. Physical education is important in educational institutions because it facilitates the successful reduction of physical inactivity, which is common among young people. According to research by De Meester et al. (2018) and Huang et al. (2019), more than half of primary school-age physical activity does not match to the recommended amount of daily physical activity. Obesity (Denisova, 2019), diabetes, high blood pressure, and mortality (Ding et al., 2020) are all caused by the considerable prevalence of inactivity among today's children and young adults. Our study aimed at investigating the time course of changes, if different lengths of resistance exercise resulted in different impacts, and how effectively those changes would be sustained when the training was stopped.

One weakness of the present study is the absence of a control group and the small number of individuals. It is impossible to differentiate the measurable alterations happening during the research from those resulting naturally from growth and maturation. However, the implication is that the resistance training

program was capable of producing noteworthy and long-term changes in body mass index, strength measurements, and body fat. We employed a periodized wave program that included strength exercise to elicit changes in body mass index, strength, power, and body fat in obese or overweight children. Based on the findings from our study, resistance exercise may now be included in regimens aiming at treating childhood obesity. Resistance training in children is recommended by the World Health Organization and several national and international organizations that focus on physical fitness, such as the National Strength and Conditioning Association. The exercise regimen should incorporate whole-body activity and be conducted at a moderate to submaximal intensity for at least 8 weeks with 2-3 sets of 8 to 20 repetitions. This sort of exercise has a good degree of compliance (about 84%) and a low incidence of injury in children. However, it should be noted that a similar rate of compliance between 80 and 100% can also be achieved for aerobic exercise interventions.

Conclusions

The rising frequency of childhood obesity highlights the need of primary prevention. More research is needed to assess whether these trends are continuing to accelerate and to investigate potential causes for these changes, such as eating habits and daily exercise. Finally, this study supports the inclusion of overweight/obese children in a resistance training exercise program. Significant gains in body composition, strength, and power were reported, suggesting that resistance exercise programs may be chosen over additional resistance training regimens in this group.

However, further research is needed to investigate if these improvements can be sustained over a longer span of time (i.e., longer than 6 months) and the impact of long-term resistance training programs, including a control group, as well as nutritional interventions in this population.

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Rehabilitation of spastic tetraplegia in pediatrics: advantages of hydro-kinesitherapy

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Abstract

Background: *At the base of this study there is the rehabilitation of spastic tetraplegia observed in a pediatric setting. Spastic tetralgia is a severe form of cerebral palsy (PCI), including all four limbs and characterized by rigidity or permanent contraction of the affected muscles. The latter is a persistent but not immutable disorder of posture and movement due to alterations in brain function due to pre-, peri- or post-natal causes, before the growth and development of the central nervous system is completed.*

Objective: *To demonstrate how a treatment of at least 6 months can give satisfactory results, even in pathological conditions such as tetraplegia. Attention is paid to treatment methods, and therefore to the rehabilitation of this pathology from the point of view of physio-kinesitherapy.*

Methodology: *An investigation and an experimental study was conducted using interviews and treatments of referred patients 2-10 years old. The interviews were carried out with parents coming from Tirana and suburbs. Data collected showed us the specific needs of each child living with the family and it was created a tailored rehabilitation plan for each of them.* ***Results:*** *Despite suffering from a severe condition, there have been significant improvements in the generic framework, especially on the activities of daily life, thus alleviating the difficulties these children are facing. The handling of each child with empathy and personalized care is needed*

to obtain satisfactory results. ***Conclusion:*** *Results showed how all the children taken in charge had an improvement in their quality of life. Their communication and even collaborative skills have improved.*

Key words: *Physiotherapy, Physical Therapy, Cerebral palsy, tetraplegic, rehabilitation, children, Aqua therapy, disability*

Introduction

Cerebral palsy (CP) is the most common physical disability in childhood that affects the development of movement. Children with cerebral palsy usually survive into adulthood and the condition is often understood lately in adulthood. In fact, impairment can vary considerably and different people with cerebral palsy aren't affected in exactly the same way. Recognizing and managing the comorbidities of cerebral palsy is as important as treating motor disabilities. Unfortunately it cannot be cured only with a series of targeted interventions or functional capacities [1]. Cerebral palsy is "a generic term" that covers a group of non-progressive, but often changeable, motor impairment syndromes, secondary to brain injuries or abnormalities that arise in the early stages of development [2]. Approximately 2 to 2.5 out of every 1000 live births in the Western world are affected [3], with higher incidences among premature infants and twins [4,5]. Cerebral palsy is characterized by atypical control of movements and positions, arising from early brain damage or dysfunction (prenatal, perinatal or postnatal). Motor disorders in cerebral palsy encompass neuromuscular and musculoskeletal abnormalities, including abnormal muscle tone, spasticity, dyskinesia, dystonia, athetosis, bone deformities, balance issues, and loss of selective motor control [6]. But our attention shifts to a type of Palsy, namely Spastic Tetraplegia. This is the partial paralysis of all four limbs due to extensive brain damage caused by lesions suffered in the prenatal, perinatal, or neonatal period, or by congenital malformations of the brain localized in the pyramidal system (part of the brain from which the impulses necessary for motor function originate). It is the most severe form of cerebral palsy [7]. It is characterized by permanent stiffness or contraction of the affected musculature. However, the severity of the condition can vary from child to child [1]. In fact, we can have moderate spastic tetraplegia, where individuals may, for example, be able to sit alone and walk short distances. On the other hand, those suffering from more severe forms of quadriplegia tend to have great difficulty carrying out every activity of daily living [7]. It can be due to several causes, such as infections, oxygen deprivation, umbilical cord prolapses, and trauma caused by the use of forceps and suction cups. However, perinatal asphyxia is thought to be a major cause of cerebral

palsy [8]. As for infections, they are increasingly implicated [9]. In the forms of spastic tetra paresis, the motor disorder affects the lower and upper limbs equally and generally manifests itself from birth, although it may become visible around twelve to 1eighteen months [10]. Symptoms of quadriplegia include difficulty or inability to communicate (dysarthria or anarthria), visual disturbances (visual agnosia, gaze paralysis, strabismus, reduced visual acuity, etc.), hearing function disorders, epilepsy (infantile spasms, Lennox-Gastaut syndrome, etc.), cognitive disorders, diffuse muscle contractures, and deformities in the joints and spine trim [10].

Physical Therapy or Aquatherapy

Physical therapy (PT) plays a central role in managing the condition by focusing on function, movement, and optimizing the child's potential. The physiotherapist uses physical approaches to promote, maintain, and restore physical, psychological, and social well-being [11]. Numerous therapeutic interventions are employed to minimize the development of secondary problems (such as normalization of tone and an increase in active range of motion), to enhance muscle strength and mobility, to attain functional motor skills for postural adaptation in various antigravity situations, and to promote functional independence at home, school, and in the community, which is necessary for daily autonomy [12]. In addition to physical therapy, hydro kinesitherapy is one of the most popular supplementary treatments for children with neuromotor disabilities [13]. This refers to the branch of rehabilitation medicine that utilizes water as a therapeutic tool, capitalizing on its hydrostatic, hydrodynamic, thermal, and metabolic properties. It is particularly beneficial for children with tetraplegia, offering an alternative exercise with low impact that is safe and advantageous [14].

In fact, water serves as an equalizing medium; its nature, which minimizes gravity, reduces joint compressive forces, providing a more conducive exercise environment for medical conditions that may limit physical training on land [15]. Adapted aquatic exercises have been particularly recommended as part of physical activity programs for children with CP. The buoyant nature of water affords individuals with CP the opportunity to experience a sense of freedom from the constraints they face on solid ground [16]. Water-based activities aid in relieving pain and muscle spasms, maintaining or increasing range of motion, strengthening weak muscles, re-educating paralyzed muscles, improving circulation, lung function, and speech, as well as contributing to the maintenance and improvement of balance, coordination, and posture [17]. The reduction in weight-bearing and ease of movement allows for safe exploration of movement, strengthening, and functional activity training with reduced joint load and impact, providing a

gentler environment for children suffering from persistent abnormal load [18,17]. Moreover, aquatic physical activities play a crucial role in the teaching-learning process and could promote greater independence, enhanced manual ability, and consequently, increased social participation for individuals with CP [19].

Methodology

Aim of the Study

In addressing objectives within the domain of quadriplegia, it is essential to delineate and discern those vested in the physiotherapist, the child's family, and fundamentally, those intrinsic to the child. The physiotherapist's objectives encompass the improvement of respiratory function, facilitation of environmental interaction, precise and diversified positioning, adaptation to postural antigravity modalities as alternatives to supine orientations, identification of specific assistive devices and orthoses, implementation of verbal/nonverbal communication modalities, preservation of musculoskeletal integrity, identification of functional strategies conducive to daily self-reliance, and autonomy within the social milieu (inclusive of modes of communication and participation in scholastic activities).

For the family, this study attempts to foster an awareness of their child's latent potential, discern prevailing challenges and issues, impart guidance for an adept and refined manual proficiency in the daily care of the child (inclusive of hygienic practices and dressing), proffer counsel on the careful utilization of aids for the accurate positioning of the child, offer recommendations for an appropriate administration of nutrition and the facilitation of rudimentary functions (chewing and swallowing), and ascertain behaviors encouraging dual communication (encompassing the utilization of gaze, mimicry, voice, and touch).

With regard to the child, this study attempts to effectuate enhancements in autonomic regulation, mastery over oral functions, and the cultivation of an accepting disposition towards sustenance. It also seeks to stimulate a heightened sense of initiative and interaction with the surroundings, facilitate seamless adaptation to antigravity postural configurations, and inculcate efficacious communication strategies.

However, it is noteworthy that the objectives of this study underwent dynamic evolution concurrent with the progress of the therapeutic interventions. Indeed, additional objectives were incorporated mid-treatment, including familiarization with aquatic environments, the establishment of a trusting relationship between

therapist and patient, acquisition of proficiency in facilitative movements for aquatic entry, mastery of initial movements and attaining confidence in one's body and its idiosyncrasies, cultivation of a positive self-image, and the realization that the sessions need not evoke anxiety or trepidation, but rather, should be perceived as moments of leisure and play.

Sample

This study included 10 patients referred in 2017, 6 males and 4 females from the age of 2 to 10 years old, all living in Tirana and its districts.

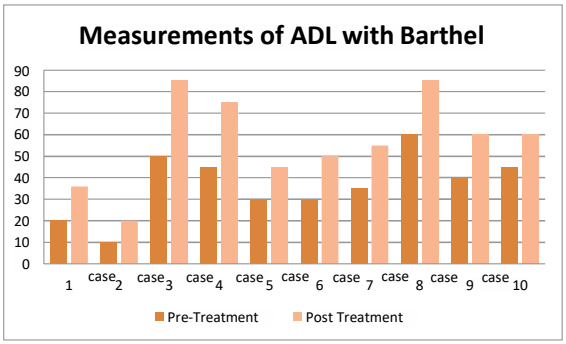
Data Instrument

A fundamental method for measuring and evaluating the daily activities of a child and assessing their integration within the family, as well as their ability to perform specific actions, is the Evaluation Scale for Daily Life Activities, commonly known as the "Barthel Index". In this study, the Barthel Index was utilized, providing an indicative score of the subject's ability to eat, dress, manage personal hygiene, wash, use the toilet, move from chair to bed and vice versa, walk on flat ground, ascend and descend stairs, and control defecation and urination. Each of these skills or functions is assigned with a score of either 15, 10, 5, or 0. For instance, 10 points are awarded if the subject feeds themselves, and 5 points if they require assistance (for example, in cutting food). In terms of controlling urination and defecation, a patient who independently manages these needs is considered independent; requiring assistance if they need any form of help, even partial, in using tools; and dependent if they use a catheter or experience episodes of incontinence, even occasionally. The maximum score of 100 is only awarded if the patient performs the task entirely independently, without the presence of any care personnel [20]. Another assessment tool employed was the ICF classification: International Classification of Functioning, Disability, and Health. This classification includes qualifiers ranging from 0=NONE to 4=COMPLETE, indicating the extent of the impairment. Its aim is to describe individuals' health status in relation to their social, family, and work environments, and consequently, their degree of impairment [21]. The data were collected through questionnaires administered to the parents of the children at the "Lady of Good Counsel" Rehabilitation Center, where they received treatment for a minimum duration of 6 months. In relation to the interviews conducted with parents regarding their children's performance of daily activities, both before and after treatment, the evaluation of the treated cases was carried out.

Results

The two chosen methods are the evaluation of Activities of Daily Living (ADL) using the Barthel Index, and the ICF scale for impairments. Based on the data obtained from these two methods, graphs were generated to facilitate a clearer observation of the results before and after treatment (pre/post treatment).

FIG. 1: Measurements of Activities of Daily Living using the Barthel Index

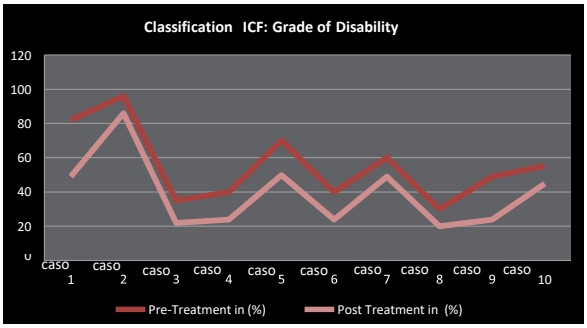


TAB 1: Scores of patients pre and post treatment

Case no.	Pre-treatment score	Post-treatment score
1.	20 /100	35 /100
2.	10/100	20/100
3.	50/100	85/100
4.	45/100	75/100
5.	30/100	45/100
6.	30/100	50/100
7.	35/100	55/100
8.	60/100	85/100
9.	40/100	60/100
10.	45/100	60/100

The difference between pre-treatment and post-treatment in Activities of Daily Living (ADL) is evident in all patients, including those in more severe conditions, where a notable improvement is observed. One can discern the positive change and the dedication that has been put into achieving these results within just six months of treatment.

FIG. 2: Grade of Disability Pre- and Post-Treatment



Also, in the ICF classification there is a clear reduction in the degree of impairment in patients.

Discussion

Based on the obtained results, progress is evident for all the examined patients. Each patient exhibited improvement corresponding to their degree of disability. The initial graph which evaluates the activities of daily living vividly illustrates the contrast between pre-treatment and post-treatment phases. The pre-treatment data were gathered through interviews with parents, providing essential insights into the child's capabilities and areas for targeted intervention. Conversely, the post-treatment phase shows the significant improvements achieved by patients. Remarkable improvements were observed after approximately six months of treatment, attributable not only to the therapeutic interventions but also to the determination displayed by children themselves during physio-kinesitherapy and hydro kinesitherapy sessions. It is crucial to emphasize that every improvement, no matter how incremental, constitutes a substantial milestone for both the physiotherapist and the patient's family. Witnessing them accomplishing tasks previously beyond their reach is a momentous achievement for all parties involved.

The second graph delineates the degree of impairment according to the ICF classification. This measurement is expressed as a percentage, utilizing a generic qualifier on a negative scale to indicate the extent or severity of the impairment. [22]: NO impairment (absent, negligible) 0-4%, MILD impairment (light, small) 5-24%, MODERATE impairment (moderate, fair) 25-49%, SEVERE impairment (remarkable, extreme) 50-95%, COMPLETE impairment (total) 96-100%. [22].

Through the ICF evaluation, we derived percentages both pre-treatment and post-treatment. Initially, we established a baseline assessment through careful

observation of the child's capabilities. This formed the basis for assigning a percentage indicative of the level of impairment. Following six months of physio-kinesitherapy, we conducted a subsequent evaluation, revealing a notable reduction in the degree of impairment compared to the outset – that is a significant accomplishment.

Conclusion

This study stressed the profound significance of working with children, particularly those coping with spastic tetraplegia. It is an effort both crucial and delicate, demanding steady commitment and boundless patience. Understanding the clinical profile of each child is the initial step, enabling tailored therapeutic approaches. In this realm, teamwork is paramount; objectives extend not only to the physiotherapist but also encompass the child and their family. The role of the family, while potentially constructive, can also pose challenges. Some families struggle to accept their child's condition, harboring hopes pinned solely on the promise of a miraculous recovery through physiotherapy. This underscores the complexity of working with families in denial and emphasizes the importance of recalibrating expectations. Short-term goals have been met within these six months. Long-term objectives remain a work in progress, acknowledging the unique circumstances of these children. In essence, the study's goal of improvement, no matter how incremental, has been realized. Each modest stride forward is a testament to the efficacy of targeted treatments and meticulous evaluation. A pivotal element in the regimen is water-based therapy or hydro kinesitherapy. It motivates children to exert themselves further, providing a temporary reprieve from their disability. The key, as always, is playfulness. Viewing tasks as games fosters a more engaged approach, easing the therapeutic process. Approaching each child demanded a tailored strategy, acknowledging their distinct diagnoses and individual personalities. Treating children necessitates a different paradigm, marked by incremental progress towards tangible goals. Recognizing their achievements, no matter how small, fosters a sense of capability and trust. The ultimate aim is to nurture a sense of autonomy within each child's realm of possibility, enabling them to perform certain tasks independently. This extends to their reintegration into society, fostering a sense of belonging and acceptance. Encouraging confidence in themselves is paramount, challenging a proactive engagement with daily life and demolishing their passive role. Working with children has been a departure from routine, demanding a unique approach characterized by nuanced steps towards well-defined objectives. Acknowledging and valuing their contributions, no matter how modest, lays the foundation for progress. This journey is guided by empathy,

attentiveness to their cues, and a holistic view of their needs, encompassing both therapy and emotional support. In summary, this experience has not only produced evident improvements but also enriched our understanding of the resilience and potential inherent in each child, despite the challenges they face. It reaffirms the profound impact of personalized, empathetic care in enhancing the lives of these young individuals.

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Analysis of the Training Needs of Healthcare Professionals (Physical Therapists, Nurses, Midwives) in Albania

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Abstract

Introduction*: The study on the analysis of the needs for continuing education in Albania aims to approach its realism in Albania scientifically within the framework of the CME's purpose. The study begins with an explanation of operational terms based on the existing theoretical framework, following the models of CME reality in the United States and European Union countries.* ***Material and methods****: The study has outlined some research questions related to the objectives of CME, how CME is implemented in countries where it is functional, what role QKEV (Quality Control of Continuing Education) plays in Albania, and what challenges CME must address.* ***Results and discussion****: Different professionals have different training needs regarding continuing education, which are evident in their clinical daily practice. These needs vary depending on their age, the institution they work at, years of experience, and acquired skills.* ***Conclusion****: There is still much to be done in continuing education, which means moving beyond the formal form of continuing education to have a direct impact on the professional growth of professionals and provide quality services for patients.*

Keywords: *Continuing medical education; nurses; midwives; physiotherapist; Albania.*

Introduction

The idea of a learning society was initially developed by UNESCO twenty years ago in the report "Learning to Be, (Curle, (1973)) " which indicated the concept that a learning society is one in which all agencies offer study programs, not just those dedicated to education (e.g., schools). CME is considered a foundational teaching method, whereas ongoing professional development implies a student-centered and self-directed learning approach (N., 2005 Oct).

The study addresses one of the contemporary issues related to healthcare professionals and specifically to continuing education, not only as a right and obligation of healthcare professionals but also as a right of patients to receive quality services.

Common threats to patient safety include medical errors, hospital-acquired infections, unnecessary exposure to high doses of radiation, and the use of incorrect medication (Masic, (2014)). The legal framework concerning the guarantee of this right at the national level is not new, but it should be emphasized that ensuring this right in terms of continuous education is still a challenge, even though the QKEV (Quality Control of Continuing Education) has been established since 2008 (QKEV, n.d.).

The purpose of Continuing Medical Education (CME) is to enhance patient care through improved clinical performance of healthcare providers (Farrow S & Group., 2012 Nov)..As both continuous education and continuous professional development are considered essential for bridging the gap between medical education and practice (Peck, (2000).) The year 2017 saw numerous continuing education activities conducted for doctors, pharmacists, and dentists employed in both public and private healthcare sectors (QKEV, n.d.). This was the second year of the mandatory certification program for nurses, midwives, and pharmacists. According to this program, healthcare professionals should accumulate a specific number of credits through participation in continuing education activities (CEA), specifically: 120 credits for doctors, 60 credits for dentists and pharmacists from 2015 to 2018, 40 credits for nurses, midwives, and assistant pharmacists during the period from 2016 to 2019. The offering of continuing education activities increased in 2017.

A total of 657 accredited activities were developed for various categories of healthcare professionals. There was an approximately 7% increase in the number of accredited activities compared to the previous year. Out of these, 211 were new applications for accreditation, while the remaining 448 were activities that had been accredited before. In 2017, the main providers of these activities continued

to be professional associations and other non-public organizations such as NGOs, which provided 69% of the activities attended by public healthcare institutions and academic institutions.

The "Healthcare" law establishes the obligation for healthcare institutions to provide continuing education activities for their employees in such a way as to fulfill at least 30% of the required number of credits. Greater attention should be paid to the provision of workplace training activities, as required by the law, but also because education, when developed in the workplace, is likely to address the real needs of healthcare personnel and healthcare services. In this way, it will not only be a formal process but also a means to collect credits. The development of workplace training or educational activities will make them not only more relevant to the needs but also more accessible and cost-free for the professionals who need to participate in them.

For nurses, DCM No. 789 dated 22/09/2015 did not establish a minimum annual requirement, and 2017 is the second year of the nursing and midwifery cycle. This has led nurses to show less interest in the early years of the cycle. Another reason why this category of professionals may not meet the recommended minimum number per year could be the lack of specifically organized nursing activities. Additionally, QKEV does not have data regarding the hiring of nurses.

Firstly, professional associations have accredited ongoing training activities, some of which are also offered online. Among these, the National Association of Public Health (NAPH Albania) has accredited various packages on ethics and healthcare communication at the National Center for Continuing Education (QKEV). They have also accredited activities related to nutritional elements and their physiological roles in the body, as well as the assessment, control, and treatment of obesity.

The Faculty of Medicine (FM) aims to promote continuing education by articulating a larger purpose of participation, including support for FM units in creating competencies for providing continuing education activities (consultation and training on continuing education principles and teaching methods that enhance the quality of programs, training, and support for continuing education activity organizers within the Faculty of Medicine's unit).

On the other hand, the Faculty invites you, "If you are a doctor, pharmacist, or dentist involved in the Faculty of Medicine's structure and are interested in designing and offering continuing education activities, please contact us to discuss the possibility of including this activity in the Faculty's continuing education curriculum" (fakultetimjekesise, n.d.).

On the official website of the "Mother Teresa University Hospital Center," there is no information about continuing education or continuing education activities that the state hospital center can offer, except for a link that leads to the QKEV

website. The same situation of lacking information about continuing education activities is observed when consulting the official website of the American Hospital and the Continental Hospital (Spitali Kontinental, n.d.).

Material and methods

The observational study in question aims to determine the continuing education needs of nurses, physiotherapists, and midwives, considering independent variables such as age, qualification, and workplace. The continuing education needs are divided into different areas of interest, included in the questionnaire (F. Antonelli). The study is based on quantitative research methodology. The sample consists of physiotherapists, midwives, and nurses working in polyclinics, hospitals, and tertiary hospitals in the Republic of Albania. The sampling method is random to avoid biasing the data with a convenience sample. The professionals vary in terms of age, professional qualification, work experience, workplace, etc. The variables considered are related to the objective of not only highlighting the need for continuing education but also providing a comprehensive picture of this requirement.

The questionnaire includes questions to gather information about age, qualifications, workplace, and self-assessment of knowledge areas related to continuing education. Participants are asked to assess their level of knowledge in these areas as either complete, relatively complete, good, acceptable, superficial, or none. The questionnaires were filled out following a formal request to the Directors of the institutions where these professionals worked.

The study was conducted from October 2017 to February 2018 with the administration of 300 questionnaires.

Results and Discussions

From a gender perspective, it appears that in the randomly selected sample, 133 are males. The questionnaire was mostly completed by nurses (183), as nursing is the most represented profession at the national level. In fact, data from the Ministry of Health of the Republic of Albania indicate that there are 12,088 nurses (of which 5,681 work in hospitals), 283 midwives (of which 120 work in hospitals and 163 in health centers), and 47 physiotherapists. Global statistics show that the majority of nurses worldwide are female. This is a well-known trend that has existed for many years. Male nurses are also part of the profession, but they make up a smaller percentage of the total number of nurses (Statista). The higher number of women in

the medical staff has led to numerous other studies, mentioning that the UNICEF (UNICEF. Studimi për vlerësimin e njohurive) study states that only 10% of the nursing staff is composed of men.

From the questionnaires collected data we could observe the older age of nurses as the oldest profession in Albania, where they cover a wide range of services. Nurses work in every hospital department, health center, consulting clinic, and more. Midwives work in maternity wards, and the average age is 36-57 years old. Physical therapy is a relatively new profession compared to midwives and nurses, which is why the majority of employed physical therapists are between 25-35 years old. Does the age affect work performance? "It influences the areas where one excels as well as in the speed of adapting to the new methods approach" (Rypicz, 2020). Nurses are among the professionals who have the most post-basic training (Master's degrees, post-graduate specializations). Among physical therapists, the most commonly represented title is the bachelor's degree (26 physical therapists); this is due to the fact that the sample is predominantly in the first age group. 12% have completed post-graduate training (Worsley, 2016).

Being part of every medical department, the majority of nurses are in tertiary and secondary hospitals. Depending on the department they serve in, the selection of specific ongoing qualification needs is necessary. Also, physiotherapists are more numerous in number near tertiary hospitals, trauma centers, and the "Mother Teresa" University Hospital Center. While midwifes connect their profession with maternity wards as secondary hospitals. Working as a team enhance the quality of the services (Babiker, 2014). The areas of knowledge considered very important or essential by midwives are predominantly clinical skills, patient communication, and technical/assistance skills like assisting traumatized patients and assisted childbirth (Butler & Aman, 2018).

Nurses have shown a predominant interest in technical skills (n=50), although almost all (n=49) report already possessing acceptable knowledge/skills. Communication with the patient and technical skills were deemed essential for the sample of midwives (n=28). The sample of nurses has identified the need to implement clinical, laboratory, prevention, patient communication, use and management of healthcare documentation, and technical/assistance skills like assisting patients with polytrauma (Gaspard, 2016).

In summary, they have highlighted areas of knowledge and competence related to their professional routine.

It is observed that 47 nurses who assessed their clinical skills consider themselves to have very superficial skills, 42 have acceptable skills, and only 20 believe they have good knowledge. This indicates a need for further training in this regard. Laboratory knowledge is considered very important by the majority of nurses (n=38), while others find it "sufficiently important" (n=32). This is particularly

significant considering that many of them believe they have very superficial knowledge and skills (n=58). Patient communication is considered very important (n=39) or even essential (n=40) by nurses. Regarding their communication skills with patients, 43 nurses believe they have high communication skills (Kourkouta, 2014). For the management of hospital documentation, most of the professionals involved believe this knowledge is essential (n=58 nurses), even though many feel they lack adequate skills (n=44 nurses). The rapid development of technology and the organization of documentation into computer programs has brought a new challenge for nurses over 50 years old. This technological change has required nurses to learn and use new devices and computer programs to record and monitor healthcare information. For older nurses who may not be familiar with information technology and computers, this has been a difficult challenge (Kamil & Wardani, 2018). The same attitude is reflected in technical skills. Regarding the skills and competencies of physiotherapists, the sample assessed clinical skills, clinical risk management, scientific research, and the management of healthcare and rehabilitation processes as essential and very important.

Conculsions

From the questionnaire responses related to the study's hypothesis, it appears that continuous training for healthcare personnel requires the fulfillment of certain objective conditions for its implementation. In Albania, in order to implement continuous training, the following conditions must be created for healthcare personnel to participate in CME activities:

1. Providing a wide and diversified range of CME events.
2. Reasonable and proportionate cost compared to the benefit derived from the activity (preferably free).
3. Training provided by healthcare institutions for employed healthcare professionals, especially in tertiary hospitals where the number of employees is higher.
4. Competent providers in selecting and producing CME events.

CME providers should consider the knowledge needs of healthcare professionals and their fields before designing training.

The fields of knowledge and their improvement can be measurable in terms of the perceived quality of healthcare services. It's also true that patients' perceptions of healthcare services are influenced by other infrastructural and governmental policies, but the quality of care provided by healthcare professionals is a fundamental component of an efficient and high-quality healthcare system.

On the other hand, mechanisms should be encouraged, motivated, and established to ensure that institutions themselves provide continuing education activities within the framework of the obligations arising from the law. This is because it makes the process more advantageous and less costly, avoiding the perception that the idea of continuing education is a method to profit from some professionals. QKEV plays a fundamental role here by accrediting programs and setting the number of credits based on the value and burden of each activity.

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Febrile Syndrome in HIV positive patients

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Abstract

Fever is one of the accompanying symptoms of HIV, mainly in the advanced stages of the disease, but its occurrence is related to a number of factors such as CD4+ Lymphocyte level, accompanying opportunistic infections; causative microorganism

ect[1]. Fever accompanies HIV from the initial stage of the "acute retroviral syndrome" infection and during the evolution of the pathology towards the AIDS stage, even in IRIS. Fever-related opportunistic infections are divided into two groups by infectious or non-infectious causes[3,4]. In our study, we included 355 HIV-positive cases who had febrile episodes in different stages of immunodeficiency. In the HIV stage (to which we referred lymphocytes CD4+ over 500 cells/mm3, and without AIDS-related opportunistic infections) there were 39 cases. In the AIDS stage, there were 143 cases with a CD4 + level of 200-400 cells/mm3: pulmonary manifestations 85 cases, gastrointestinal 58 cases. With a level of CD4+ lymphocytes below 200 cells/mm3 123 cases; pulmonary involvement 45 cases, intestinal 32 cases, CNS 11cases, hematological.13 cases, disseminated 15 cases, FUO 7 cases. With CD4+ level below 50 cells mm3, 50 cases: non-Hodgkin's lymphoma 9 cases. MAC 3cases, TBC.19 cases, CNS lymphoma. 6 cases, retinal CMV 3 cases, Kaposi's sarcoma 10 cases.

***Keywords**: FUO; HIV; AIDS*

Introduction

Fever is one of the common symptoms manifested by HIV patients in different stages of the disease[1]. From the primary infection "acute retroviral syndrome" which is manifested by a subfebrile condition, lymphadenopathy, and pharyngitis similar to mononucleosis. In the evolution of the pathology towards the AIDS stage as a result of the progressive decrease in CD4+, fever is related to the appearance of opportunistic infections. In 80% of cases it is identifiable and in 20% of it may remain FUO[2,3.] According to the CDC, patients with HIV infection are classified in 3 stages based on the level of CD4 lymphocytes[4]. Lymphocytes above 500 cells/mm3, between 200 – 500cells / mm3 and below 200 cells / mm 35 cases.

This division provides a useful, though not perfect, framework for evaluating fever in the HIV-infected patient in each of these categories. In HIV + cases with CD4+ Lymphocytes over than 500 cells/mm3, they should be evaluated for febrile syndrome like immunocompetent subjects. In the stage of advanced immunosuppression, fever is increasingly common[4]. With the progressive decline of the CD4+ count, the frequency and variety of infectious complications also increases. In this area, in the differential diagnosis of fever, opportunistic infections such as pneumocystosis, CMV, toxoplasmosis, disseminated MAC, histoplasmosis and disseminates coccidomycosis and cryptoccocal meningitis should be considered[6,7,8.]

AIM

Evidence of febrile syndrome, one of the companions of acquired immunodeficency in its initial stage and up to progressively severe ones, even in a paradoxical form during immune reconstitution IRIS.

Method

The study is a retrospective analytical type. 355 HIV-positive cases, registered in the HIV/AIDS outpatient clinic of the Infectious Service from 2013 to 2018, were analyzed, which manifested fever in different stages of immunodeficiency. We analyzed demographic data such as gender and age; Staging according to the level of CD4+ lymphocytes at the time of the febrile syndrome; Sorting by systems affected and type of opportunism associated with fever.

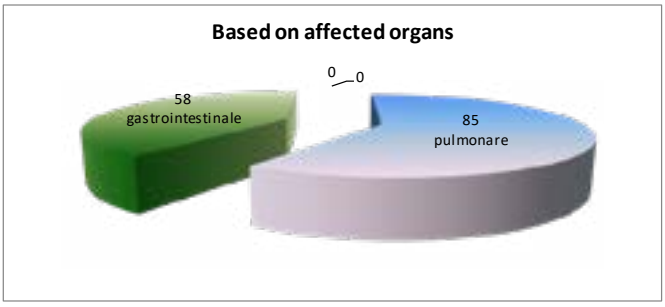
Results

I Based on gender, 215 were men and 140 were women. Regarding distribution according to age group: 20-30 years old - 56 cases, 31-40 years old - 77 cases, 41-50 years old - 113 cases, 51-60 years old - 65 cases; 61 – 70 years old - 29 cases, over 70 years old - 5 cases.

I.1 In the stage of HIV infection (to which we referred CD4+ lymphocytes over 500 cells/mm3, and without AIDS-related opportunistic infections) there were 45 cases.

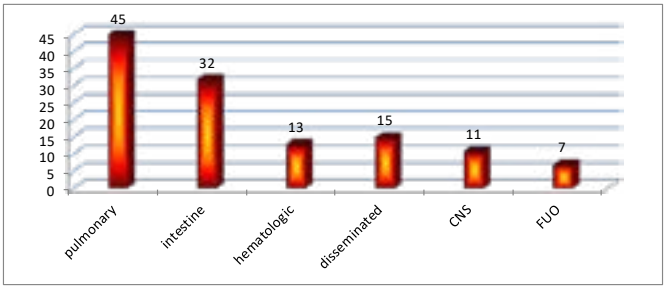
I.2 In the AIDS stage with the level of CD4+ 200-500 cell/mm3 there were 143 cases; pulmonary manifestations 85 cases, gastrointestinal 58 cases.

FIG. 1: Affected systems in the AIDS stage with CD4+ level between 200 – 500 cell/mm3



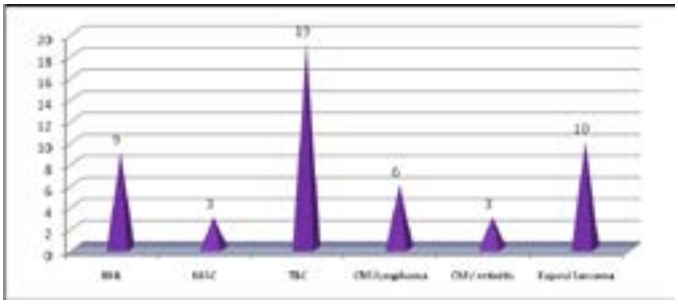
II.3 The level of CD4+ lymphocytes < 200 cells/mm3 123 cases; pulmonary involvement 45 cases, intestinal 32 cases, CNS 11 cases, hematological. 13 cases, disseminated 15 cases, FUO 7 cases.

FIG. 2: Affected systems in the AIDS stage with CD4+ below 200 cells/mm3



1.4: The level of CD4+ < 50 cells mm3, 50 cases: non-Hodgkin lymphoma 9 cases. MAC 3 cases, TBC.19cases, CNS lymphoma. 6cases, retinal CMV 3 cases, Kaposi's sarcoma 10cases.

FIG. 3: Opportunistic infections with CD4+ below 50 cells/mm3



Discussions

Fever-related opportunistic infections are divided into infectious and non-infectious causes. Infectious agents are: Pulmonary (PCP, TBC, MAC, Aspergillosis, CMV)[6,7,8,9]; Gastrointestinal (Clostridium difficile, Cryptosporidium parvum, microsporidia, Shigella species, Campylobacter jejuni, with Candida, HSV and CMV)[10]; Neurological (Toxoplasma gondii, Cryptococcus neoformans, cryptococcal meningitis, tubercular meningitis)[11,12]; Multisystemic pathology (visceral leishmania, disseminated CMV, disseminated MAC, extrapulmonary TB)[13].

Fever from non-infectious agents: Drug reactions - Possible explanations for the mechanism of drug hypersensitivity reactions in HIV-positive subjects

include an increase in the use of provocative drugs, an increase in the incidence of viral infections and immune disorders[17]. Rheumatological pathology associated with HIV-1 infection, especially Reiter's syndrome, psoriatic arthritis, Sjogren's syndrome, polymyositis, rheumatoid arthritis, Morbus Still and vasculitis[20,21]. This association is not yet known. Malignancies - non-Hodgkin's lymphoma, primary CNS lymphomas, and rarely Kaposi's Sarcoma. Thrombophlebitis is found in HIV-infected individuals, which is thought to be due to hypercoagulant states and predisposing factors such as immobility[15,16]. Fever can manifest as IRIS - systemic inflammatory response against infection, which is triggered during immune restoration, the clinical syndrome is characterized by lymphadenopathy, fever, leukocytosis and pathology that occur soon after the start of HAART and mainly in patients with CD4 < 100 cells/mm3. This immunological phenomenon is associated with infections MAC and M. tuberculosis manifesting as localized lymphadenitis[20,21,]. CMV manifesting as acute intraocular infection, hepatitis B and C manifesting as an outbreak of acute hepatitis, herpes simplex manifesting as extreme herpetic lesions that may be hemorrhagic[22,23,24.]

Conclusions

Fever continues to be a common symptom among HIV+ patients at all stages of disease progression. While antiretroviral regimens and IO prophylaxis have a significant impact on overall survival, they have also added a layer of complexity to the approach to fever in this category through IRIS. The level of T-CD4 + cells can be used as a rough, although not perfect, guide to the assessment of fever. Patients with CD4 + T-cell counts greater than 500 / mm3 and between 200 & 500 / mm3 are more prone to M. tuberculosis and pulmonary bacterial infections. Evaluation of fever in patients with CD4 + T-cell counts less than 200/mm3 is more challenging because the differential diagnosis is greater and the specificity of many presentations is lost. (Atypical mycobacteria, M. tuberculosis, Pneumocystis carini, lymphoma, in areas of endemicity, leishmaniasis) Despite the polymorphism of possible etiologies, the source of fever can be identified in most patients. A thorough diagnostic evaluation should be followed in all cases.

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The importance of accurate clinical information in requests for radiological examinations: a comprehensive analysis

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Abstract

Introduction: *Requests for radiological examinations are the first step in selecting patients to undergo radiological examinations. The range of radiological equipment, protocols and examinations is very wide. Also, technological developments at very fast rates, as well as improvements in study protocols lead to innovations and updates in medical radiology. The starting point of this literature review study is our personal clinical experience, where we have often encountered requests for radiological examinations formulated without minimal clinical information.* ***Purpose:*** *This paper highlights the multifaceted benefits of having ample clinical information in order to select an optimal, widely accepted, and most importantly effective protocol to achieve the required imaging diagnosis. It is also of great importance for clinicians of various fields that their recommendations for radiological examinations can give the expected*

answers so that imaging diagnosis together with clinical and laboratory data reach an accurate diagnosis and optimal treatment for the patient. ***Methods:*** *The selected sources were critically evaluated for their relevance and reliability in order to provide a complete perspective on the subject. The literature was selected on PUBMED and Medline.* ***Results:*** *From the several study groups that were engaged in finding data we found out that clinical information improved the accuracy of interpretation, clinical relevance, and confidence of reporting; however, reporting time was not substantially affected by the addition of clinical information.* ***Conclusions:*** *The findings of this literature review suggest that clinical information has a very positive impact on the correct selection of the examining protocol, on patient management, and most importantly on radiological reporting. It is in the best interest of radiologists and technicians to communicate the importance of clinical information as a very efficient tool for reporting examinations and to respond to radiological examination requests of referring clinicians as rigorously as possible. Further work is recommended to establish standards so that the requirements criteria for radiological examinations are specific, clear, and well-orientated across the wide range of examination techniques found in the diagnostic field.*

Keywords: *Imaging; medical requirement; clinical information; communication; protocol; radiologic report.*

Introduction

It is usually routine for radiologists to interpret imaging examinations and formulate an imaging report using clinical information provided by the referring physicians of the examinations. Clinical information refers to all information that summarizes the medical requirements detailing the patient's clinical situation and should include the current presenting problem, current and past medical history, medications currently taken, possible allergies if any, clinical suspect, and clinical question to answer. The medical request can take one of two routes from the referrer to the radiologist: via the radiology technician, who completes the imaging examination before sending it along with the medical request to the radiologist; or the request is transmitted directly to the radiologist who then reviews the clinical information and selects the imaging protocol to be performed, before transferring the patient and request to the radiologic technician. The radiologist is also able to review clinical information on demand during image interpretation and radiological report formulation.[1]

Clinical information is used to give the radiologist a greater understanding of the clinical context of the patient under radiological examination. For all medical

imaging examinations, a referral or request compiled by a specialist physician is required. The request should list the patient's identifying details and indicate the type of examination required.[2,3] The request should be signed and dated by the referrer.[2] This allows compliance with radiation safety regulations or aspects of MRI safety and maximum workflow efficiency. When the patient presents to the referrer (clinician), they are evaluated by the specialist and a request for imaging studies is compiled, using information about the patient's health. This information is very useful in radiology, both for technicians and radiologists.

Criteria for the selected literature

During this literature review study, we have included only those studies that clearly emphasized and had to do with clinical information and its impact on radiological examinations, either in terms of reporting accuracy, protocol selection, and examination planning, as well as the importance of this information in the accuracy of imaging diagnosis.

Studies and literature reviewed

In a study undertaken by a group of British researchers, the aim of the study was to determine whether clinical information changes the radiological report of CT. 50 cases were studied and each study was interpreted by two or three consultant radiologists, before and after clinical information was obtained. 19 reports were changed after clinical information was known.[4]

Meanwhile, another study was undertaken to evaluate the impact of questionnaires completed by patients at the time of CT examination for the identification of possible causes of abdominal pain, compared only to the requests of clinicians. Added information from patients was found to have a positive impact and pain was associated with new CT findings other causes of pain were identified and included diverticulitis, cystitis, peritoneal implants, epiploic appendicitis, metastatic bone disease, umbilical hernia, gastritis, and SMA syndrome. In conclusion, this study group concluded that patient questionnaires provide additional clinical history, increase diagnostic yield, and improve radiologists' confidence in CT reporting.[5]

In another case study of 250 clinical requests for examinations, it was seen that the addition of clinical information given to patients by imaging technicians had a positive effect on radiographic interpretation in 2/3 of these medical requests.[6]

In a retrospective study of 315 cases of CT and MRI examinations taken together, to look at the accuracy of the compilation of radiological requests it was found that

the indications of the requests were more likely to be incomplete (256/315, 81%) than discordant (133/315, 42%) compared with the clinician's notes ($p < 0.0001$). The potential impact of inconsistency between clinical information in clinician requests and notes was higher in effect on radiologist interpretation than on scan planning (135/315, 43%, vs. 25/315, 8%, $p < 0.0001$). Thus this study concluded that: Improving the availability of relevant clinical information documented within the imaging examination request is necessary both for the aspect of planning the scan and for an optimal interpretation of the examination.[7]

In a study of subtle fractures, a 10% increase in confidence and accuracy of interpretation was observed when clinical requests had complete written information and when the information was accompanied by a chart that accurately indicated the site of pain.[8]

In a study on "stroke" where the clinical records of 733 patients admitted to the hospital as suspected of "stroke" were reviewed, in the findings of the study it was seen that in the cases where the clear clinical indication for "early stroke" was emphasized, the sensitivity of CT without contrast increased with increasing information and clinical data on patients, and the study emphasized that whenever possible, relevant clinical history should be made available to physicians interpreting emergency head CT scans.[9]

In a prospective blinded study consisting of 50 consecutive patients who were examined in the radiology department for CT scanner. Each study was interpreted by two of three consultant radiologists, before and after familiarization with the clinical information. 19 radiology reports were changed after the clinical information became known to the radiologists. Clinical follow-up was available in 15 cases. In ten cases reports were more accurate after clinical information and in five cases reports were less accurate. In three of the five cases where accuracy was reduced, the clinical information provided by the referring clinicians was incorrect. It was concluded that clinical information influences CT imaging reports and diagnosis. If the information is correct, it has a beneficial effect; if it is incorrect it has a harmful effect. The more complex the investigation, the more important the clinical information. There was a correlation between the interpreting physicians regarding the influence of the patient's clinical information. Therefore, accurate clinical information improves the radiology report. It is the clinician's responsibility to provide this information in an accurate and understandable form.[10]

In another study, the effect of clinical information on the accuracy of reporting accident and emergency radiographs was evidenced. Two groups of radiologists were tasked with interpreting a total of 50 sets of radiographs, 30 subtle fractures, and 20 controls. In half of them, the clinical history and the exact location of the pain and problem were given, and in the other half, no such information was given. After an interval of 6 months, the radiographs were viewed again with the amount

of information reversed. Observers were asked to determine the presence of the injury, describe its location, and indicate how certain they were of their diagnosis. Correct diagnosis improved from 72.3 percent to 80.3 percent overall and from 68.1 percent to 81.4 percent in the fracture group. All observers improved their performance as clinical details became known. The results confirm that accurate clinical details improve injury localization and improve imaging diagnosis ratio.[11]

Even in mammographic examinations, the impact of clinical information has an impact on the improvement and accuracy of radiological reports. Thus, in a study conducted on 240 mammograms with and without clinical information by two different radiologists, it was concluded that the addition and familiarity with clinical information increased specificity and sensitivity in radiological interpretation.[12]

A study that included detailed clinical information coupled with the help of a DWI sequence on MRI made it possible to more accurately identify stroke cases, and it was found that when combined with acute stroke-specific examination such as DWI, the clinical information it did not add much diagnostic accuracy, but on the other hand, the specificity of the two techniques together to investigate acute stroke is reinforced.[13]

Positive results for our thesis were also found in the study of neuropathy of the optic nerve by means of MRI, when the clinical information is detailed, the imaging protocol with FOV and dedicated sequences for optic neuritis such as STIR and contrast sequences made it possible to achieve a greater accuracy in the imaging diagnosis of optic neuritis by MRI with a dedicated protocol. A review of clinical information improved inter-reader agreement, particularly when assessed for contrast enhancement in the optic nerve.[14]

Idiopathic pulmonary fibrosis (IPF) is a progressive fibrotic interstitial lung disease (ILD). This study describes the central role of high-resolution computed tomography (HRCT) in the diagnosis of IPF and discusses how communication between pulmonologists and radiologists can be improved to make the interpretation of HRCT scans more effective. Clinical information is important in the interpretation of HRCT scans, as the likelihood that specific radiological features reflect IPF is not absolute but depends on the clinical context, this study highlights that the more clinical information specific to IPF the pulmonologist provides the more imaging diagnosis is closer to accuracy. [15]

Discussions

Most of the included studies support the thesis that clinical information has a positive effect on the reporting of radiological reports. Studies have shown

that imaging interpretations improve accuracy, increase the confidence of the radiologist, and provide clearer information to the clinician. The study did not focus much on the effect of reporting time although some studies showed that clinical information had no significant effect on reporting time. Of course, the addition of clinical information and in some cases, laboratory information or assistance with some additional imaging examinations significantly strengthened the confidence of the radiologist in giving the imaging diagnosis. Clinical information also helps radiology technicians in standardizing scanning protocols whether in MRI, CT, or radiographic projections. Patients who were well-informed about their problem or who had with them previous examinations which were added as clinical information, served to increase the confidence of radiological reporting as a result of adding information about morbidity. Clinicians played an essential role in providing clinical information and often in specifying the pathology in chronically ill cases that underwent scanning examinations for further diagnostic or follow-up.

Conclusions

The findings of this literature review indicate that clinical information communicated to the radiologist has a positive impact on the radiology report. These results are relevant for the main consumers of medical imaging, that is, clinicians and not only those who benefit from more accurate imaging information for their doubts and achieve a better diagnostic effect for their patients. These results are also important for radiologists, as they demonstrate the potential improvement that the communication of clinical information can have on the quality of reporting. It is in the best interest of radiologists to communicate the importance of clinical information for radiologic reporting through the establishment of standard criteria to guide clinical practices and requirements from clinicians to the imaging department. They are also important for radiology technicians to establish standard and sometimes specific protocols for certain pathologies or problems in the range of imaging protocols in the menus of advanced imaging devices such as MRI and CT.

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