

Self-Care Performance of Children with Ventriculoperitoneal-Shunt

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Abstract

Background: Children who have a ventriculoperitoneal shunt (VP shunt) have to deal with a number of difficulties, all of which have an effect on how well they can execute the daily tasks associated with self-care. Children who have ventriculoperitoneal shunts may have a variety of effects on their physical, psychological, social, and academic self-care performance. These effects may vary from child to child. **Aim:** The study aimed to explore Self-care performance of children with ventriculoperitoneal- shunt. **Tools:** Two tools were used to collect data the structured interview questionnaire and Self-care Assessment Scale. **Design:** A descriptive exploratory design was used. **Sample:** A convenient sample of eighty children with VP shunt was participated in the study. **Setting:** outpatient clinic of Cairo University Specialized Pediatric Hospital. **Result:** there was a low level of performance in children with ventriculoperitoneal- shunt recruited from. **Conclusion:** The current study concluded that the low level of self- care performance of children with VP shunt related to physical, psychological, social, and school performance. **Recommendation:** Conduct a thorough assessment of the child's self-care abilities, including physical, emotional, and social aspects and develop an individualized care plan based on the assessment findings.

Keywords: self-care performance, children, ventriculoperitoneal shunt.

Introduction:

Keeping up with normal self-care routines might be difficult for kids with ventriculoperitoneal shunts (Miyajima et al., 2016). When cerebrospinal fluid builds up in the brain, as in hydrocephalus, a ventriculoperitoneal shunt can drain it into the abdomen. For the shunt to continue working properly, these children need constant attention (Giacinti, 2016).

According to a 2018 study by Dewan et al., the rate of pediatric hydrocephalus is 123 per 100,000 live births in low and middle-income nations, but only 79 per 100,000 live births in high-income countries. This statistical model estimates that 400,000 new cases of pediatric hydrocephalus will occur annually around the world. However, it is likely that these numbers understate the true prevalence.

Ventriculoperitoneal (VP) shunting is the neurosurgical procedure of choice for addressing hydrocephalus. Morbidity is still associated with shunt surgery, despite developments in shunt system technology and design (Larsson, Israelsson, Eklund, & Malm, 2018). Children with VP shunts

frequently have shunt dysfunction. The condition manifests itself when the shunt is unable to remove extra cerebrospinal fluid from the brain, resulting in signs including headaches, nausea, vomiting, or behavioral abnormalities. When a shunt fails, immediate medical intervention is required (Agarwal et al., 2017).

Fever, redness, edema, or discharge are all signs of infection at the shunt site or in the shunt system. Antibiotics must be administered promptly to treat a shunt infection, and shunt revision surgery may be necessary (Hanak et al., 2017). The movement of CSF can be impeded by the development of obstructions within the shunt system. Headaches, nausea, and behavioral abnormalities are some of the symptoms associated with shunt dysfunction (Kahle et al., 2016). If a shunt becomes blocked, surgery may be necessary to remove the obstruction and restore normal drainage. Over drainage or underdrainage of CSF fluid can occur as a side effect of the ventriculoperitoneal shunt. Low brain pressure, brought on by excessive drainage, has been linked to headaches, dizziness, and impaired vision (Caronni et al., 2019). Symptoms of

underdrainage include head and/or stomach pain, nausea, and/or altered mental status (**Baltateanu, Ciobanu, & Berceanu, 2019**).

Physical activity in children with VP shunts may be restricted for safety reasons or because of the severity of their condition (**Romero, Ros, & Rus, 2014**). They may need to avoid activities like contact sports where there is a heightened danger of a head injury or shunt malfunction. As a result, they may struggle in physical education classes or at sports they enjoy doing in their spare time (**Inversetti et al., 2018**). Because of their underlying disease or the side effects of their shunt, some children with VP shunts may develop cognitive or learning issues. These challenges may necessitate a more accommodating and supportive educational environment for the student (**Caronni et al., 2019**).

Careful monitoring of the shunt site is a typical issue connected to self-care performance in children with ventriculoperitoneal shunts (**Tully and Dobyns, 2014**). The location must be cleaned and dressed to prevent infection, and indicators of shunt dysfunction or obstruction must be watched for. Shunt systems are fragile, therefore young children or those with cognitive or physical impairments may have difficulty carrying out these duties on their own (**Giacinti, 2016**).

The requirement for repeated medical checkups and treatment presents still another difficulty. Healthcare practitioners frequently need to see children with ventriculoperitoneal shunts on a regular basis to monitor shunt performance and treat any issues that may emerge. This can put a strain on families, especially if they have other difficulties, such as a lack of resources or access to healthcare (**Zervos & Walters, 2019**).

Physical performance in children who have ventriculoperitoneal shunts may also be impaired (Smith et al., 2016). They may need to avoid some physically demanding or contact sports to protect the shunt. As a result, they may feel left out or frustrated because of their diminished participation in PE or other physical activities (**Isaacs et al., 2018**). Children with ventriculoperitoneal shunts may also have difficulty taking care of themselves

psychologically. Their disease, the shunt, and any necessary medical treatments may cause them anxiety or terror. As a result, they may struggle to maintain self-care habits or give adequate performances (**Winiewska et al., 2012**).

A multidisciplinary strategy is typically required to address these concerns and enhance self-care performance for children with ventriculoperitoneal shunts (**Khalafallah et al., 2017**). In order to offer the best treatment possible for the kid and their family, it may be necessary for healthcare practitioners, teachers, and mental health specialists to work together. Self-care skills, anxiety management tools, and tailored care plans can all play a role in helping patients learn to effectively manage their shunts (**Murali, Job, & Udayakumaran, 2019**).

It is important for healthcare providers, educators, and caregivers to be aware of these common health problems facing children with ventriculoperitoneal shunts. Regular monitoring, prompt recognition of symptoms, and appropriate medical interventions are crucial in managing these issues and ensuring the well-being of these children (**Prakash et al., 2018**).

Significance:

To improve the general health and quality of life of children with ventriculoperitoneal shunts, it is important to understand and fix their problems with self-care. By getting the right help and support, these kids can better deal with the problems that come with their situation and learn the skills they need to take care of themselves (**Del Bigio, & Di Curzio, 2016**).

In an Egyptian study by **Hamdan (2018)**, it was pointed out that hydrocephalus is the second most common kind of brain problem that is present at birth. At the moment, a ventriculoperitoneal tube is the most common way to treat hydrocephalus. In the ventriculoperitoneal shunting process, this method uses the peritoneal cavity so that cerebrospinal fluid (CSF) can be taken in.

Therefore, the significance of this work lies in the fact that it fills a gap in the previously published research. There has been a relatively

small amount of research conducted that focuses especially on how well children with VP shunts manage their own self-care. This study contributes to a greater knowledge of the overall well-being of these youngsters as well as the quality of life they lead by investigating various aspects of their lives.

In addition, the research highlights the multifaceted aspect of a child's growth and well-being. It acknowledges the importance of physical engagement, such as participation in physical performance, for the maintenance and growth of their bodies at every stage of their lives. It is essential for their mental and emotional growth that they participate in a variety of social activities, such as interacting with their classmates and developing new relationships. The research provides an all-encompassing perspective on the lives of children who have VP shunts by looking at the lives of these children from a variety of angles.

Operational definition:

Self-care performance is the daily performance which includes physical, psychological, social, and school performance, that children would practice achieving their best daily living potentials. It will be measured by Self-care Assessment Scale (SCAS): The scale adapted from Wang et. al., 2015

Aim of Study:

The aim of the current study explores Self-care performance of school-age children with ventriculoperitoneal- shunt.

Research Question:

Q1: What is the level of Self-care performance for school-age children with ventriculoperitoneal- shunt?

Q2: what are the physical, psychological, emotional, social, and school self-care performance for school-age children with ventriculoperitoneal- shunt?

Methods

Research design:

Descriptive exploratory research design utilized to fit the current study. Exploratory research is carried out when there is insufficient knowledge about a particular

phenomenon or when a problem has not been clearly defined. Its purpose is not to offer definitive and conclusive answers to research questions, but rather to delve into the research topic at different levels of depth and gain a better understanding of it (Lelissa., 2018).

Setting:

The study conducted at outpatient clinic second floor of Cairo University Specialized Pediatric Hospitals CUSPH which include about 10 clinics of different medical specialties services as Medicine, cardiovascular, ophthalmology and nephrology... etc. the surgery clinic of neurosurgery receiving children with VP shunt from all over Egypt who perform the surgical procedure at the hospital for follow up.

Sample

A convenient sample of 80 children attending outpatient neurosurgical clinic for follow up participated in the current study. The sample size was calculated according to the following formula (<https://byjus.com/sample-size-formula/>).

$$n = \frac{T^2 \times p(1-p)}{m^2}$$

Description:

n = required sample size.

t = confidence level at 95% (standard value of 1.96).

p = estimated prevalence of children with VP shunt 2019 at CUSPH =0.89)

m = margin of error at 5% (standard value of 0.05).

$$n = \frac{(1.96)^2 \times 0.89 (1 - 0.89)}{(0.05)^2} = 80$$

Inclusion criteria

School age children with VP shunt attending outpatient of CUSPH neurosurgical clinic for follow up. Both gender and age from 7 to 18 years old recruited in the current study.

Exclusion criteria

Children with advanced neurological and behavioral complications such as epilepsy and autism spectrum disorder which affect their communication abilities to perform the study questionnaire.

Pilot Study:

A preliminary investigation involving 15 school-age participants was conducted to assess the comprehensibility and practicality of the interview questions, as well as to determine the duration of the interviews. These participants were part of the overall sample.

Data of the current study gathered using the following tools:

- 1- **Structured interview questionnaire:** developed by the researcher to assess personal data of children participated in the study include questions about the child five items (age, gender, place of residence, diagnosis, reason for the visit to neurosurgical clinic).
- 2- **Self-care Assessment Scale (SCAS):** The scale adapted from Wang et. al., 2015 the tool included 50 items and was modified by researcher omitting 7 items that were against our culture and used 36 items to be accommodated to our that asked children about their performance of self-care performance. The tool translated from English into Arabic and the translation were reviewed by 5 experts in pediatric surgery nursing, pediatric neurosurgery and psychiatric nursing and tested for its content validity by five experts in pediatric and psychiatric nursing. The SCAS assess self-care performance between the ages of 10 and 18 years it consisted of four parts:

Part I: Physical Self-Care: it involved 10 items about eating healthy food, personal hygiene, exercise, wear clothes, eat regular, activity, sleep, medical appointments, rest when sick

and overall physical care satisfaction.

Part II: Psychological/ Emotional Self-Care: it included 10 items covering time off from school, hobbies, distraction, learning new things, express feeling, strengths and achievements, vacations, comfort, talk about their problem, and overall psychological/emotional satisfaction.

Part III: Social Self- Care: it involved 8 items covering spend time with friends, call a friend, conversation, meet new people, ask for help, enjoyable activity, good time with a close friend and overall social self -care.

Part IV: School performance Self-Care: it included 8 items about school skills, attendance to school, takes assignments, learn new from school, build relationship with colleagues, take breaks during homework, maintain learning at home, success in school and overall school performance as achieved goal in school.

Scoring system:

The overall scores on the scale were calculated by adding up the scores from the 36 items. The scores were divided based on the frequency of occurrence, with a score of 1 assigned to items that were rarely observed, a score of 2 for items that were occasionally observed, a score of 3 for items that were frequently observed, and a score of 4 for items that were very commonly observed. The total score obtained was 144. Scores below 72 were considered indicative of lower self-care performance in adolescents, while scores of 72 or higher indicated higher self-care performance.

The average leveling of self-care performance of children done according to the following:

Self-care performance	Interval level of mean for self-care performance		
	Low	Moderate	High
(Physical, Psychological, Social, School performance) respectively	Lower than moderate level, equal and less than (1.50, 1.98, 1.50, 1.68) Respectively	Start from this point and lower than highest (2.41, 2.06, 2.01, 1.79) respectively	equal and more than (2.84, 2.43, 2.24, 1.94) respectively

Validity and reliability:

The data collection tools were evaluated for content validity by five experts in the fields of pediatric nursing and psychiatric nursing. The experts reviewed the content of the tools and

provided feedback on the clarity of sentences, appropriateness of content, and sequence of items. Based on their input, modifications were made to improve the tools. To test reliability, the tools were offered to 15 children, and the

reliability coefficients (alpha) between the questions were found to be 85 %.

Data collection procedure:

Official permission for data collection to conduct the current study was obtained from the director of the Cairo University Specialized Pediatric Hospital CUSPH. The researcher introduced herself to the children and their legal guards. Assessment was obtained from children matching the inclusion criteria after a clear and simple explanation about the nature of the study, aim, and benefits. The researcher interviewed children individually to collect the data while waiting their turn in the outpatient waiting area. The researcher went to the patient one day per week and received approximately from five to six cases a day. Each child was asked to fill in the tools and the researcher. The time needed for each child ranged from 30-45 minutes since sometimes the child entered the follow up then continued after finishing. Data was collected from February (2019) to January (2020).

Ethical consideration:

The written consent obtained from the children's legal guard and assent of children taken after complete description of the purpose and nature of the study to obtain their acceptance and their cooperation. All data gathered from children during the study was considered confidential and children and their legal guards informed about that as well as their rights to withdraw from the study at any time without giving any reason.

Statistical analysis:

The statistical analysis of the data was conducted using SPSS version 20, which is a software package designed for social studies. The data was computerized and analyzed using various descriptive and inferential statistical tests. Qualitative data was presented in terms of frequency and percentage. The mean and standard deviation were calculated for each variable, while the weighted mean was estimated for each category. The means were then classified into low, moderate, and high categories to compare self-care performance. The correlation between variables was examined using the Pearson correlation

coefficient. A significance level of $p < 0.05$ was used to determine statistical significance

Results

The table(1) illustrated that 60 % of children were male and 40% were females , 43.75% & 41.25% children age ranged from 10 to 12 and 13-15 years old respectively, regarding residence 66.25 % of children were from urban areas and 33.74% of them were from rural areas.

Figure 1 illustrated that 52.5 % of children had neurological malformation such as aqueduct stenosis, Chiari malformation, dandy walker and arachnoid cyst. While 33.75 % of children had brain tumors and 12.5% had trauma or infections as meningitis.

Table(2) shows that, (38.75 %) of children eat healthy food occasionally followed by 28.75 %, 27.5 % frequently and rarely eat healthy food respectively. while 5% eat healthy food continuously with mean \pm SD (2.1 \pm 0.60). 31.25 %, 26.25%, 23.75% of children with VP shunt frequently, occasionally, and continuously take care of their personal hygiene respectively. while 18.75% rarely take care of their personal hygiene with mean \pm SD (2.6 \pm 0.74). 76.25 %, rarely share in exercises while 21.25 % occasionally share in exercises with mean + SD (1.3 + 0.49). 51.25 % of children with VP shunt frequently wear clothes that help to feel good with mean + SD (2.65 \pm 0.75). 71.25% of children with VP shunt occasionally eat regularly while 25% of children with VP shunt frequently eat regularly with mean + SD (2.3 \pm 0.52). 50% and 43.75% of children with VP shunt rarely and occasionally participate in fun performance with mean + SD (1.6 \pm 0.69).

moreover 48.75 %, & 46.25 % of children with VP shunt frequently and occasionally respectively get enough sleep with mean + SD (2.6 \pm 0.63). 82.5% of children with VP shunt, go to preventive medical appointments like dental care and periodic checkup. 46.25% take rest when feel sick with mean + SD (2.1 \pm 0.43). 53.75 % of children believe that they frequently have overall physical self-care with mean +SD (2.6 \pm 0.72).

Also, table(1) indicates that wearing clothes that help feel good, take care of personal

hygiene, get enough sleep and overall physical self-care are the moderate average of physical self-care (2.65 ± 0.75 , 2.6 ± 0.74 , 2.6 ± 0.72 , 2.6 ± 0.63). followed by eat regularly, eat healthy food, Rest when sick, participate in fun performance, go to preventative medical appointments, and share in exercises with mean + SD (2.3 ± 0.52 , 2.1 ± 0.60 , 2.1 ± 0.43 , 1.23 ± 0.60 , 1.6 ± 0.69 , 1.3 ± 0.49) as low average of physical care respectively. The main mean + SD for children physical self-care is 2.33 ± 0.77 .

Regarding psychological self-care performance table 2 represents that, 57.5% and 32.5% of children with VP shunt frequently and occasionally take time off from school respectively. 85% of children with VP shunt, rarely participate in hobbies. 53.75 % of children occasionally get away from distraction by used technology i.e., phones, play boards. And 46.25 % of them rarely learn new things unrelated to school homework. 51.25 % of children reported that they express feelings in a healthy way talking to their parents. 43.75 % of children reported they occasionally go on vacation or trip while 30 % rarely do. 85%, of children with VP shunt rarely do something comforting like re-watching their favorite movie. 46.25% occasionally talk about their problems followed by rarely and frequently do (30%, 23.75 respectively).

Also the table (3) illustrated that average mean score of express feelings in healthy way as they told their parents quietly about their problems, take time off from school, and go to vocation as highest level ($2.64 + 0.77$, $2.62 + 0.66$, $2.4 + 0.78$) of psychological self-care mean score while get away from distraction as phones and play boards as moderate level of psychological self-care ($2.06 + 0.74$) regarding overall psychological health, recognition of their strengths and weaknesses, talk about their problems, learn new things, do something comforting, and participate in hobbies come at the low level ($2.03 + 0.69$, $1.94 + 0.74$, $1.94 + 0.74$, $1.64 + 0.68$, $1.19 + 0.48$, $1.19 + 0.48$) . The main mean score of psychological self-care is low level as it is 1.96 ± 0.67 .

Regarding social self-care performance of children with VP shunt table (4) clarified that 53.75 % of children frequently spend time with

their friends who like and 32.5% of them occasionally do. 42.5 % and 33.75% of children with VP shunt occasionally and frequently call their friends through mobile of using messenger of face-book of what's application and other social media to contact their friends. 50 % of children occasionally have stimulating conversation with others followed by 23.75 % frequently do. 68.75 %, of children with VP shunt occasionally meet new people in schools, medical staff, and others. 53.75 % of children occasionally ask others for help if needed as in their homework. 48.75 % of children occasionally do enjoyable performance and 41.25 % do frequently. 42.5% of children with VP shunt occasionally have a good time with their close friends. And 46.25 %, 42.5% respectively have overall social self-care occasionally and frequently.

table(4) also highlighted that the highest level of average mean + SD (2.62 ± 0.72 , 2.61 ± 0.68 , 2.55 ± 0.86 , 2.5 ± 0.68 , 2.5 ± 0.89 , 2.38 ± 0.88) while the moderate level of mean + SD (2.08 ± 0.62 , 2.05 ± 0.81). And the main mean + SD 2.41 ± 0.78 considered high level of social self-care performance.

Regarding school performance of children with VP shunt table 5 revealed that 75 % of children rarely improve their school skills by taking additional courses and 18.75 % occasionally do. 46.25 % rarely attend school regularly while 45 % of them do occasionally. 40 % of children with VP shunt rarely take assignments in school and interested. 46.25 % of children rarely need special learning as individualized educational plans while 31.25 % frequently need special learning as individualized educational plans. 56.25 % of children rarely build relationships with their colleagues because of their frequent absence while about 25% of children occasionally build relationships with colleagues at school.

40%. 41.25 % rarely and occasionally take break during homework respectively while 31.25 % do frequently. 50% children rarely maintain learning at home. While 40% do occasionally. 47.5 % of children are rarely satisfied with their school performance while 26.25 %, 25 % were occasionally and frequently satisfied respectively.

Table (5) also clarified that the highest average mean + SD (2.16 + 0.69, 2.1 + 0.89) and the middle average mean + SD (1.91 + 0.81, 1.8 + 0.78) the low average mean + SD (1.65 + 0.62, 1.64 + 0.68, 1.6 + 0.81, 1.33 + 0.62) and the main mean average for school performance was low.

Table (6) illustrates that 23.75 % of children had high level of self -care

performance and 37.5% of them had moderate level of performance while 38.75% had low level of performance with mean + SD (2.11 + 0.86).

Table (7) shows that there was a statistically significant positive correlation between children's age and total score of self-care performance.

Table1 (1): The frequency distribution of children with VP- shunt personal data (n=80)

Personal data	No	%
Gender		
Male	48	60
Female	32	40
Age per years		
10 ≤ 12	35	43.75
13 ≤ 15	33	41.25
16 ≤ 18	12	15
$\bar{X} \pm SD$	11.4 ± 1.56	
Residence		
Urban	53	66.25
Rural	27	33.75

Figure 1: Percentage distribution of children with VP shunt diagnosis (n= 80)

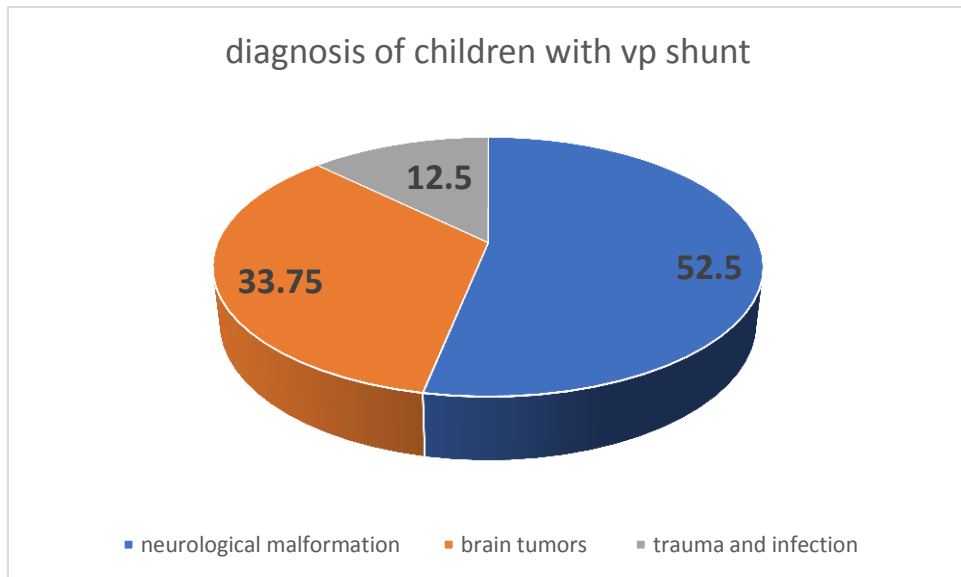


Table (2) Frequency distribution Physical self-care activity of children with VP - shunt (n = 80)

Physical self-care	Responses								$\bar{x} \pm SD$
	rarely		Occasionally		Frequently		continuously		
	N	%	N	%	N	%	N	%	
Eat healthy food	22	27.5	31	38.75	23	28.75	4	5	2.1 + 0.60
Take care of personal hygiene	15	18.75	21	26.25	25	31.25	19	23.75	2.6 + 0.74
Share in exercise	61	76.25	17	21.25	2	2.5	0	0	1.3 + 0.49
Wear clothes that help to feel good	5	6.25	26	32.5	41	51.25	8	10	2.65 + 0.75
Eat regularly	0	0	57	71.25	20	25	3	3.75	2.3 + 0.52
Participation in fun performance	40	50	35	43.75	3	3.75	2	2.5	1.6 + 0.69
Get enough sleep	1	1.25	37	46.25	39	48.75	3	3.75	2.6 + 0.63
Go to preventative medical appointments	66	82.5	11	13.75	1	1.25	2	2.5	1.23 + 0.60
Rest when sick	0	0	3	3.75	37	46.25	13	16.25	2.1 + 0.43
Overall physical self-care	5	6.25	26	32.5	43	53.75	6	7.5	2.6 + 0.72
Total mean + SD	2.33 + 0.77								

Table (3): percentage distribution of Psychological/ Emotional self-care activity of children with VP - shunt (n = 80)

Psychological/ Emotional self-care	Responses								$\bar{x} \pm SD$
	Rarely		Occasionally		Frequently		Continuously		
	N	%	N	%	N	%	N	%	
Take time off from school-homework	4	5	26	32.5	46	57.5	4	5	2.62 + 0.66
Participate in hobbies	68	85	9	11.25	3	3.75	0	0	1.19 + 0.48
Get away from distractions by used technology (phone, play boards)	17	21.25	43	53.75	18	22.5	2	2.5	2.06 + 0.74
Learn new things unrelated to school homework	37	46.25	36	45	6	7.5	1	1.25	1.64 + 0.68
Express feeling in a healthy way talking	6	7.5	25	31.25	41	51.25	8	10	2.64 + 0.77
Recognize own strengths and achievements	24	30	37	46.25	19	23.75	0	0	1.94 + 0.74
Go to vocation or day- trips	7	8.75	35	43.75	31	38.75	7	8.75	2.4 + 0.78
Do something comforting	68	85	9	11.25	3	3.75	0	0	1.19 + 0.48
Talk about their problem	24	30	37	46.25	19	23.75	0	0	1.94 + 0.74
Overall Psychological self-care	0	0	20	25	33	41.25	37	46.25	2.03 + 0.69
Total mean + SD	1.96 + 0.67								

Table (4): percentage distribution of social self-care activity of children with VP – shunt (n = 80)

Social self-care	Responses								$\bar{x} \pm SD$
	Rarely		Occasionally		Frequently		Continuously		
	n	%	n	%	n	%	n	%	
Spend time with friends who like	5	6.25	2	32.5	43	53.75	6	7.5	2.62 ± 0.72
Call a friend	7	8.75	3	42.5	27	33.75	12	15	2.55 ± 0.86
Have stimulating conversations	10	12.5	4	50	19	23.75	11	13.75	2.38 ± 0.88
Meet new people	10	12.5	5	68.75	13	16.25	2	2.5	2.08 ± 0.62
Ask others for help if needed	5	6.25	4	53.75	9	11.25	23	28.75	2.05 ± 0.81
Do enjoyable performance with other	3	3.75	3	48.75	33	41.25	5	6.25	2.5 ± 0.68
Have a good time with a close friend	8	10	3	42.5	25	31.25	13	16.25	2.5 ± 0.89
Overall social self-care	1	1.25	3	46.25	34	42.5	8	10	2.61 ± 0.68
Total mean + SD	2.41 ± 0.78								

Table (5): percentage distribution of School performance children with VP – shunt (n = 80).

School performance self-care	Response								$\bar{x} \pm SD$
	Rarely		Occasionally		Frequently		Continuously		
	n	%	n	%	n	%	n	%	
Improve school skills i.e.: additional courses	60	75	15	18.75	3	3.75	2	2.5	1.33 ± 0.62
Attending school	37	46.25	36	45	6	7.5	1	1.25	1.64 ± 0.68
Takes assignments in school (interested)	32	40	23	28.75	25	31.25	0	0	1.91 ± 0.81
Need special learning (individualized educational plans)	37	46.25	8	10	25	31.25	10	12.5	2.1 ± 0.89
Build relationships with colleagues in school	45	56.25	20	25	13	16.25	2	2.5	1.65 ± 0.62
Take breaks during homework	32	40	33	41.25	25	31.25	0	0	2.16 ± 0.69
Maintain learning at home	40	50	32	40	8	10	0	0	1.6 ± 0.81
Overall school performance	38	47.5	21	26.25	20	25	1	1.25	1.8 ± 0.78
Total mean + SD	1.77 ± 0.87								

Table (6): Level of Self-care performance of children with VP – shunt (n= 80)

Levels of Self-care performance	no	%	Minimum	Maximum	Mean ± SD
Higher level	19	23.75	75	132	2.11 ± 0.86
moderate level	30	37.5	64	110	
Low level	31	38.75	45	85	

Table (7): Correlation between children with VP shunt personal data and total mean score of self-care performance (n = 80).

Personal Characteristics	Total mean score of self-care performance	
	r	P
Age	0.471	0.009*
Gender	-0.290	0.120
Place of residence	0.108	0.570
Diagnosis	0.108	0.572

Discussion:

Children with VP shunts living in areas with limited resources should have their ability to care for themselves independently taken into account. In these situations, kids may have a harder time than usual controlling their emotions and performing other forms of self-care. The ability of these children to self-care may be hindered by the lack of universal access to healthcare and specialized support. Since the results of this study demonstrated that the sample performed poorly on the primary measure of self-care, the research issue was satisfactorily resolved.

The current study showed that two thirds of children were male, two fifths of children age ranged from 10 to 12 years old, regarding residence two thirds were from urban areas. This result aligns with a previous study conducted at Saudi Arabia discussing the prevalence of hydrocephalus which found that two thirds of

children were male suggesting a potential gender disparity in the occurrence or treatment of hydrocephalus (Alenezi, 2018).

As for, the observation that two-fifths of the children in the study fell within the age range of 10 to 12 and 13-14 years old respectively that could be interpreted as the researcher tool could be implemented for children aged 10- 18 years, so this age group is dominated as hydrocephalus managed in younger age and VP shunt replacement done. Regarding residence, children with VP shunt at CUSPH comes from all over Egypt to perform the VP shunt replacement but follow up could be done in near areas from their residence to avoid travelling for a long time and economic burden.

The study revealed that a significant proportion of children with VP shunts had underlying neurological malformations. Specifically, half of the children in the study had

conditions such as aqueduct stenosis, Chiari malformation, dandy walker, and arachnoid cyst. These malformations are known to be associated with the development of hydrocephalus and often require surgical intervention, such as the placement of a VP shunt. This result agrees with a study of Agarwal et al., (2017) who studied VP shunt replacement in children and stated that the most common underlying cause was neurological defects.

The presence of brain tumors was another notable finding, one third of the children in the study having this underlying condition. Brain tumors can lead to the development of hydrocephalus either due to obstruction of cerebrospinal fluid flow or increased production of cerebrospinal fluid. In such cases, the placement of a VP shunt is often necessary to manage the hydrocephalus and relieve intracranial pressure.

Furthermore, the study reported that less than one fifth of the children had VP shunts due to trauma or infections such as meningitis. Traumatic brain injuries or infections can cause disruptions in the normal flow and absorption of cerebrospinal fluid, resulting in hydrocephalus. In these cases, a VP shunt may be required for the management of hydrocephalus and to prevent further complications.

These findings highlight the diverse etiologies of hydrocephalus in children requiring VP shunts. Understanding the underlying conditions associated with hydrocephalus is crucial for appropriate diagnosis, treatment, and long-term management. It also emphasizes the importance of multidisciplinary care involving neurosurgeons, neurologists, oncologists, and infectious disease specialists in providing comprehensive care to these children.

The study findings indicate that children with VP shunts have a low level of physical self-care performance mean \pm SD (2.33 ± 0.77). This suggests that these children may face challenges in independently carrying out activities related to personal hygiene, mobility, and other physical self-care tasks. This result matches the result of Abd Elaziz et al., (2018) who mentioned the diminished physical self-care while applying protocol of care for children with VP shunt and empowering their mothers to enhance care provided. Also agree with Prakash, et al., (2018)

who studied quality of life of children with VP shunt and stated that they experience a range of health-related issues in different aspects of their lives as physical quality and have a diminished quality of life.

This might be a logical consequence as the presence of a VP shunt can impact a child's physical abilities and functional independence. The need for ongoing monitoring, maintenance, and care of the shunt system can limit their ability to engage in physical activities. The physical limitations associated with hydrocephalus and the presence of a shunt can affect their mobility, coordination, and overall physical functioning influencing their physical self-care performance.

It is important to note that the low level of physical self-care performance observed in these children may also be influenced by other factors such as age, cognitive abilities, and comorbidities which is the most common age group included in the current study. However, younger children or those with cognitive impairments may require more assistance and support in performing physical self-care tasks.

Physical self-care is an area where children with VP shunts can improve with the help of programs that emphasize autonomy and proper scaffolding. As part of this process, the child and their caregivers may participate in occupational therapy to improve their kid's fine motor skills, physical therapy to increase the child's range of motion and strength, and education and training on self-care approaches and tactics. Furthermore, healthcare providers and caregivers should collaborate to modify the child's surroundings to meet their requirements. Accessible and secure adaptations to the home or school setting may be part of this. The quality of life, independence, and well-being of children with VP shunts could be improved by addressing the poor level of physical self-care performance. To maximize each child's physical self-care abilities, it is crucial to offer complete assistance and treatments that are uniquely suited to their requirements.

The current study suggests that children with VP shunts have a low level of psychological/emotional self-care performance with main mean \pm SD (1.96 ± 0.67). This indicates that these children may encounter difficulties in managing their emotional well-

being and coping with the psychological challenges associated with their condition.

This result is similar with Wiśniewska, et al., (2012) who compare two surgical techniques and impact on children psychological affection and mentioned the of psychosocial performance of children with VP shunt.

A child's mental and emotional health might be significantly affected by having to live with a VP shunt. Because of their health and the restrictions it places on their daily life, as well as the continuous medical treatments and potential disruptions to their lives, they may feel frustrated, anxious, or depressed. Appointments, stays in the hospital, and general anxiety about health status can all contribute to emotional strain.

The need of treating these children's mental well-being and providing appropriate support is highlighted by their low level of psychological/emotional self-care performance. Counseling and other forms of psychosocial intervention can be quite useful in assisting people in building psychological resilience, coping skills, and emotional regulation.

In addition, providing children who have VP shunts with a supportive atmosphere that encourages open communication, comprehension, and empathy can make a significant contribution to the psychological well-being of these patients. It is possible to contribute to the reduction of stigma, the promotion of inclusivity, and the provision of a supportive network by educating these children's caregivers, teachers, and classmates about the particular issues they encounter.

It is necessary to acknowledge that the mental and emotional requirements of children who have VP shunts are equally as important as their physical demands. This is because the psychological and emotional needs of these children cannot be ignored. We are able to improve their quality of life, as well as their general well-being, by addressing the low level of psychological and emotional self-care performance that they have. This also helps to promote mental health. It is absolutely necessary for healthcare experts, psychologists, educators, and families to work together in order to give these children with comprehensive care and support.

The result of the current study clarified that children with VP shunts often exhibit a low level of social self-care performance with mean + SD (2.41 + 0 .78). This indicates that these children may face challenges in developing and maintaining social relationships, engaging in social activities, and effectively navigating social interactions. This result agrees with Prakash, et al., (2018) who stated that children with VP shunt have a low quality of life related include social dimension.

There are a number of ways in which having a VP shunt installed can affect a child's ability to interact socially. Participation in social events and relationships with peers may be hindered by the need for continuing medical care, potential restrictions on physical activity, and the possibility of cognitive or developmental impairments. Because of these obstacles, they may feel alone, have a hard time forming friendships, and think they stand out from their classmates.

The need of addressing the social needs of these children and providing adequate support is highlighted by the poor level of social self-care performance observed in this group. Children with VP shunts can benefit from learning new social skills, receiving counseling, or joining support groups in order to improve their self-esteem, confidence, and interactions with others.

It is also important to help these children's social development by providing them with welcoming communities that foster mutual respect, compassion, and understanding. Sharing their experiences with peers, educators, and caretakers can help build a community of acceptance and tolerance and lessen the likelihood of social isolation. Additionally, chances for social engagement and the formation of meaningful relationships can be provided to children with VP shunts by immersing them in extracurricular activities or community programs suited to their abilities and interests.

In order to improve the social well-being, sense of belonging, and quality of life for children with VP shunts, we must first address their subpar performance in social self-care. Providing these children with the resources and experiences they need to grow socially requires a concerted effort on the part of healthcare providers, educators, families, and the community as a whole.

The study findings indicate that children with VP shunts often exhibit a low level of school performance with mean + SD (1.77 + 0.87). This suggests that these children may face challenges in meeting academic expectations and achieving educational milestones. This result agrees with the result of Schmidt et. al., (2018) who document the poor school performance of children with shunt compared with other children.

If a child has a VP shunt, it may be difficult for them to concentrate on school work as much as they would like to. Medical visits, hospital stays, and other disruptions to a student's usual school schedule can cause them to fall behind academically. Fatigue, pain, or cognitive deficits are just some of the physical and psychological symptoms of their disease that can make it difficult for these students to do well in the classroom.

The low level of school performance observed in these children underscores the importance of providing appropriate support and accommodations to help them succeed in their educational endeavors. Collaboration between healthcare providers, educators, and families is essential to develop individualized education plans (IEPs) or 504 plans that address the specific needs of these children. These plans may include provisions for modified assignments, extended time for tests, or additional support services such as tutoring or assistive technology.

Additionally, it is crucial to create a supportive and inclusive school environment that fosters understanding and empathy. Educating teachers and classmates about the challenges these children face can help reduce stigma, promote inclusivity, and encourage a supportive network within the school community.

By addressing the low level of school performance in children with VP shunts, we can help them reach their full academic potential and ensure they have equal educational opportunities. Providing appropriate support, accommodations, and a nurturing school environment are vital in maximizing their educational outcomes and overall well-being.

Conclusion:

The current study concluded that the main level of performance of self-care for children with VP shunt is low in the physical,

psychological/emotional, and school performance dimensions while there was a high level of performance in social dimension.

Recommendation:**The current study recommended:**

1. **Comprehensive Assessment:** Conduct a thorough assessment of the child's self-care abilities, including physical, emotional, and social aspects. This assessment should consider the child's developmental stage, cognitive abilities, and any specific challenges related to their VP shunt. The assessment should also involve gathering information from parents, caregivers, and the child themselves to gain a holistic understanding of the child's self-care needs.
2. **Individualized Care Plan:** Develop an individualized care plan based on the assessment findings. This plan should address the specific self-care deficits identified and focus on promoting independence and optimal functioning in daily activities. Tailor interventions and goals to the child's abilities, preferences, and developmental level.
3. **Collaborative Approach:** Involve the child, their parents or caregivers, and other healthcare professionals in the development and implementation of the care plan. Collaborative decision-making ensures that the plan is realistic, feasible, and considers the unique needs and goals of the child and their family.
4. **Education and Training:** Provide education and training to the child and their parents or caregivers in self-care skills related to their specific needs. This may include teaching techniques for bathing, dressing, grooming, and medication management. Ensure that instructions are clear, concise, and provided in a manner appropriate for the child's age and developmental level.
5. **Supportive Environment:** Create a supportive environment that encourages the child's independence and self-care performance. Modify the physical environment, if necessary, to accommodate the child's needs and promote safety. Provide adaptive equipment or assistive devices that can facilitate self-care activities and enhance the child's independence.

6. **Social Support and Peer Interaction:** Facilitate opportunities for the child to engage in social activities and interact with peers. This can include arranging playdates, encouraging participation in age-appropriate recreational activities, or connecting the child with support groups for children with similar conditions. Promoting social interactions can enhance the child's self-esteem, confidence, and overall well-being.
7. **Regular Evaluation and Monitoring:** Continuously evaluate the child's progress in self-care performance and adjust the care plan as needed. Regularly communicate with parents or caregivers to gather feedback and address any concerns or challenges that may arise. Monitor the child's emotional well-being and provide appropriate support or referrals to mental health professionals if needed.
8. **Transition Planning:** Develop a transition plan for the child as they grow and mature. As they reach different developmental stages, reassess their self-care needs and adjust the care plan accordingly. Collaborate with other healthcare providers involved in the child's care to ensure a smooth transition from pediatric to adult healthcare services.

Recommendations for further study on the low level of self-care performance among children with VP shunts:

1. **Larger Sample Size:** Conducting studies with a larger sample size would provide more robust and generalizable results. By including a diverse range of participants, researchers can better understand the variability in self-care performance among children with VP shunts and identify potential factors that contribute to the low levels observed.
2. **Longitudinal Study Design:** A longitudinal study design would allow for the examination of self-care performance over an extended period. This would provide insights into the trajectory of self-care skills and how they may change or develop over time. Longitudinal studies can also help identify any potential factors or interventions that may influence improvements in self-care performance.
3. **Comparison Groups:** Including appropriate comparison groups in future studies can provide a better understanding of the unique challenges faced by children with VP shunts in comparison to their peers. Comparing self-care performance between children with VP shunts and children without the condition could highlight specific areas of difficulty and inform targeted interventions.
4. **Multidimensional Assessment:** Utilizing a multidimensional assessment approach would allow for a comprehensive evaluation of self-care performance. This could involve incorporating measures that assess various aspects of self-care, such as physical, emotional, and social dimensions. By capturing a broader range of self-care domains, researchers can gain a more comprehensive understanding of the specific areas in which children with VP shunts struggle and tailor interventions accordingly.
5. **Intervention Studies:** Conducting intervention studies would help determine the effectiveness of specific interventions or support strategies aimed at improving self-care performance in children with VP shunts. Implementing and evaluating interventions, such as targeted self-care training programs or psychoeducational interventions, could provide valuable insights into effective approaches to enhance self-care skills and overall well-being.
6. **Qualitative Research:** Complementing quantitative studies with qualitative research methods, such as interviews or focus groups, can provide a deeper understanding of the experiences and perspectives of children with VP shunts regarding self-care. This qualitative data can offer valuable insights into the specific challenges they face and inform the development of intervention strategies that address their unique needs.
7. **Long-Term Outcomes:** Investigating the long-term outcomes of self-care performance among children with VP shunts is essential. Understanding how self-care skills developed during childhood impact their functioning and well-being in adolescence and adulthood can provide valuable information for healthcare providers, educators, and families in supporting these individuals throughout their lifespan.

By implementing these recommendations, researchers can further expand the knowledge

base on self-care performance among children with VP shunts. This will contribute to the development of targeted interventions and support strategies aimed at improving their overall well-being and quality of life.

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