


## Radiological Imaging Picture Of Head Trauma Due To Violence In Children

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Article Info	ABSTRACT
<b>Keywords:</b> Radiology, head trauma, child abuse.	In everyday life, violence is still often encountered. Child abuse is all forms of physical or emotional harm, sexual abuse, trafficking, neglect, exploitation resulting in injury Head trauma in children is one of the leading causes of death and disability. Of course, there are many considerations to perform the examination considering the risk of radiation that can interfere with the process of brain development for children < 2 years of age. CT scan is one of the radiological examination that is still often used today. This literature review aiming to determine the radiological imaging of head trauma due to violence in children. The method used was a literature review with a Narrative Reviews design to identify and summary previously published articles on the radiological imaging of head trauma due to child abuse. From the 20 articles summarized, the results showed that the radiological imaging of head trauma due to violence in children often occurred in boys and the most common CT scan radiological images were intracranial hemorrhage (subdural) hematoma, epidural hematoma, intracerebral hematoma.
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### INTRODUCTION

In everyday life, violence is still often encountered. Violence is any form of use of physical force in the form of threatening actions against an individual or a group of people which has the potential to cause injury, trauma, psychological loss, developmental disorders and even death. One of the most common victims of violence is a child. A child is defined as an individual under the <sup>age</sup> of 18. <sup>1</sup>

Violence against children is any form of physical or emotional harm, sexual abuse, human trafficking, neglect, exploitation that results in actual or potential injury/harm to a child's health, survival, development or dignity, committed in the context of a relationship of responsibility, trust or power. Violence to child can happen When only and where just including at home, at work play even at school. Even though school is place Where child accept moral, ethical and academic education, even become House second for child. However, the reality is precisely in part school happen case violence. Whether it is done by friends playmate, senior, teacher or guard school cleanliness. <sup>2</sup>

An average of 50% or an estimated more than 1 billion children in the world aged 2-17 years experienced physical, sexual, emotional violence and neglect in Africa, Asia and North America in the past year. In Asia, an estimated average of 64% of children experienced violence against children. <sup>3</sup> Indonesian children aged 6-12 years are most often experience violence sexual (33%) and emotional (28.8%), compared with violence of a nature physical (24.1%). Violent space to child part big occurred at home (129 cases ), then on the streets (79 cases ), schools (10 cases ), institutions religious (2 cases ), sector economy (21 cases ). Violence sexual also occurs No only at home (48.7%), but also in other places general (6.1%), school (4.1%), place work (3.0%), others (0.4%). <sup>2</sup>

trauma in children is one of the causes of high mortality and disability. Approximately  $\pm$  25% of causes of death in children are due to head injuries and 2%-5% of them will leave severe disabilities in cases of severe head injuries. <sup>4</sup> The head is a very complex organ unit. Therefore, fast and accurate handling is expected. Because late handling or late referral can cause the patient's condition to worsen and reduce organ function. <sup>5</sup>

Head trauma is a condition in which the brain is disturbed by external forces, which can cause temporary or permanent damage to brain function, physical abilities, and psychosocial aspects. This is an important factor in causing serious illness and disability, and is a leading cause of death in children and young adults. <sup>6</sup> According to *Brain Injury Association of America n*, head trauma is a form of damage to the head caused by external physical impact, not due to congenital abnormalities or degenerative processes. This impact can result in decreased consciousness, as well as disrupt cognitive and physical function. <sup>20</sup>

Inspection GCS is performed before treatment to assess consciousness and help determine the appropriate initial treatment for the patient and GCS is performed after treatment for observation and discharge of the patient. GCS also has an important role in predicting the risk of death at the beginning of the examination, but GCS has weaknesses in assessing the verbal component in intubated patients. <sup>7</sup>

Supporting examinations are indicated in moderate to severe head trauma. Supporting examinations include laboratory examinations consisting of complete blood count, serum electrolytes, blood sugar and S100B/ calcium-binding protein B ( biomarkers that indicate brain cell damage). Other supporting examinations are radiological consisting of head *CT scan* or head MRI and EEG examination. Several imaging modalities are currently widely performed in cases of head trauma in children, for example *CT scans*. head and MRI of the head. Of course there are many considerations for conducting these examinations considering the risk of radiation that can interfere with the brain development process for children aged < 2 years. *CT scan* is one of the radiological examinations that is still often used today. The use of MRI is currently more widely used because it shows more sensitive results than *CT scans*, but due to equipment and cost factors, *CT scans* are still the main diagnostic aid. CATCH ( *Canadian Assessment of Tomography for Childhood Head injury* ) and PECARN ( *Pediatric Emergency Care Applied Research Network* ) are several algorithms used to determine the use of *CT scans* in patients with mild brain injury. <sup>8</sup>

## METHOD

This research is a *literature research review* with *narrative design review*. This method is used to identify, study, evaluate, and interpret all available research. By using this method, can be reviewed and systematic journal identification, which in each process follows the steps or established protocols.

Type data on research This in the form of data secondary, that is database from various reference, such as research journals, journal reviews, annuals reports, books and related data with description imaging head trauma radiology consequence violence against children in 2020 - 2024. At the stage beginning search article journal obtained via electronic database that is *Google Scholar* found 210 articles, *Clinical Key* 5 articles, *PubMed* 10 articles, and national survey results such as RISKESDAS and WHO searching for with using keywords : radiology, head trauma and child abuse. After done *screening*, 20 relevant articles were obtained and became material analysis in study this. Content analysis carried out using a synthesis table by comparing research methods, subjects and objects of research, as well as the variables studied include description imaging head trauma radiology consequence violence against children.

## RESULTS AND DISCUSSION

### Results

NO	Authors	Publisher	Objective study	Subject	Method	Results
1	G Orman. <i>et.al.</i>	<i>American Journal of Neuroradiology</i> (2022)	The purpose of article This is For use approach based on mechanism For review Neuroimaging findings of severe head trauma in infants.	Subjects in the study This is children with a diagnosis of head trauma heavy	Types of research used is studies retrospective	In the research This obtained results one hundred and two children ( ratio) male / female : 75:27; mean age, 9.49; range, 0.27–53.8 months ) were included. Subdural hematoma was the most common (83.3%) finding on classic neuroimaging. Communicating vein thrombosis is the most common non- classical neuroimaging findings (30.4%). Injury ligament bone behind seen in 23/49 patients. Injury hypoxic-ischemic in a way significant more higher in children who died (P =.0001).
2	Christopher Pennell, <i>et.al.</i>	<i>Journal of Pediatric Surgery</i> (2021)	Research purposes This is evaluate babies who experience violence physical and compare	Population in the study This is children aged <12 months who were evaluated For violence	Types of research used is studies	158 infants with a mean age of 5.0 months underwent 3D helical CT and SR. Consensus

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			accuracy of 3-dimensional CT (3DCT) and SR for detect skull fractures.	physical undergoing 3D helical CT and skull radiography.	retrospective	reading identified 46 fractures (29.1%) on 3D helical CT and 40 fractures (25.3%) on SR. IRR was higher for 3D helical CT ( $\kappa = 0.95$ ) compared with SR ( $=0.65$ ). 11 fractures were identified on 3D helical CT but not on skull radiographs. 5 fractures were identified on skull radiographs but not on 3D helical CT. There was no difference in diagnostic accuracy of 3D helical CT and SR ( $\chi^2 = 1.56$ , $p = 0.211$ ).
3	Ms. Rita Dewi, <i>et.al</i>	<i>Pediatric Essence</i> (2020)	Research purposes This For get description characteristics clinical in children with injury head of Dr. Cipto Hospital Mangunkusumo.	Population in the study This is child age <15 years who experience head trauma case	Types of research used is studies retrospective	During period time study found amount cases of head trauma in children age <15 years 503 cases. Age most between age 6-10 years, ratio man : woman is 1.7:1. Of the 503 patients injury head, 196 done CT scan of the head Because reason

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						costs. In patients who are examined <i>CT scan</i> head, 32.65% showed normal picture. Apart from that there are cerebral edema picture or bleeding, in 40.81% of cases found another picture of <i>CT scan</i> head such as pneumonia, frontal linear fracture, froccidextra.
4	Jacques du Plessis, <i>et.al</i>	<i>SA Journal of Radiology</i> (2022)	Research purposes This For know whether introduction of The Pediatric Emergency Care Applied Research Network (PECARN) clinical decision rule (CDR) will influence level use of CT for patient the child who came with injury head blunt light to House Sick academic in Gauteng, South Africa.	Population study This is patient 16 years old or less, who came to pediatric emergency unit PEU in period 24 hours after experience injury head blunt light	Types of research used is studies retrospective descriptive	Of 100 patients, 20% were classified as very low risk, 61% as risk middle and 19% as risk tall for TBI according to PECARN guidelines. A total of 23% (n = 23) of patients own positive CT findings of TBI as indicated by ICH or cerebral contusion 18 (78%), cerebral edema 2 (9%), midline shift or herniation brain 2 (9%), skull diastasis 3 (26%) and pneumocephalus 10 (43%).

NO	Authors	Publisher	Objective study	Subject	Method	Results
5	Turlough Bolger, et.al.	<i>Irish Medical Journal</i> (2020)	The purpose of this study was to determine the prevalence of head trauma presenting to the pediatric emergency department (ED) and to characterize it based on demographics, triage category, neuroimaging disposition or return visits.	The population of this study were children aged 0-16 years who were diagnosed with a diagnosis of injury. head head, bleeding intracranial, or skull fracture.	This study uses a study analysis retrospective	This study revealed that head trauma diagnosed in 13,392 of 224,860 (5.9%), with a median (IQR) age of 3.9 (1.4 - 8.3) years. Regionally, 3% of children aged <5 years come every year. Total patients treated / transferred was 10.8% (n = 1460). The imaging rate nerve was 4.3% (n= 570).
6	Süleyman Şahin, et.al	<i>Neurological Sciences</i> (2024)	Study This aiming For investigate connection between findings clinical initial and cranial CT findings with morbidity and mortality in children treated in intensive care units intensive pediatric (PICU) with mild, moderate, and severe TBI.	Research sample all children ( aged 1 to 18 years ) who are cared for at home our hospital ( level 3 trauma center ) with a diagnosis of TBI.	This study uses a study analysis retrospective	Study This show results that of 129 patients, 83 (64%) were male, and 46 (36%) were women, with mean age 6.8 years. Falls (n = 51, 39.5%) and accidents Then cross vehicles (n = 35, 27.1%) are the most common type of trauma observed. Findings imaging normal brain was found in 62.7% of patients, while 37.3% showed pathology intracranial. Bleeding is

NO	Authors	Publisher	Objective study	Subject	Method	Results
						findings The most common CT found. Severe TBI (n = 26, p = 0.032) and mortality (n = 9, p = 0.017) were more Lots happened in an accident Then cross. Mortality rate in a way overall in the population study is 10.1%. In children with TBI, cranial CT imaging functioning as method an important beginning For patient with manifestation neurologically. In special, GCS score $\leq$ 8, bleeding multiple, cerebral edema diffuse, and bleeding intraventricular associated with symptom remains and death.
7	Hafiz Travmatic Beyin The funeral olan Çocuklarda, et al.	<i>Anadolu Clinic Tip Bilimleri Movies, Movies</i> (2021)	Study This aiming For evaluate How routine use of computed tomography (CT) scanning contributes to the approach therapy in	Population study This is children with mild TBI	This study uses a study analysis retrospective	A total of 113 patients met the inclusion criteria and 57.5% of them were male. The median age of the patients was 28 ( interquartile range : 6.5-



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			diagnosed children with injury brain traumatic mild (TBI).			80) months. Seventy-two (63.7%) patients were asymptomatic on admission and there were no findings on physical examination in 54 (47.8%) patients. Of all traumatic lesions, 64.9% were linear skull fractures, 13.7% were hematomas. subdural hemorrhage, 13% contusion, 3.8% subarachnoid hemorrhage, 3% epidural hematoma, 0.8% intraparenchymal hemorrhage, and 0.8% depressed skull fracture. A second routine head CT scan was performed after 11±2.5 hours and showed improvement in 6.2% of patients. No changes in medical care or neurosurgical intervention occurred.
8	Muhammad	ARTERY:	Study This aiming For	Population in the study	The type of	Characteristics Head CT

NO	Authors	Publisher	Objective study	Subject	Method	Results
	Yunus <i>et.al</i>	<i>Journal Health Sciences</i> (2020)	know characteristics CT scan results of the patient's head injury head at home Sick Dr. H. Abdul Moeloek January – December period 2018	This is all over notes record medical patient injury head who is being treated at home Sick Dr. H. Abdul Moeloek January – December period 2018	research in this study is descriptive research with a cross-sectional approach.	Scan results in patients injury the most heads age 16-25 years, average gender sex male, injury head light most dominant as well as most CT-Scan results show normal results with image of SAH (subarachnoid hemorrhage).
9	Msy Rita Dewi MS, et al.	Pediatrics ( 2020 )	Knowing the clinical predictors of intracranial hemorrhage traumatic in children.	All patients who came for treatment to the Emergency Installation (IGD) of Ciptomangunkusumo Hospital, the outpatient polyclinic of the child neurology division of Ciptomangunkusumo Hospital with a history of head injury within a period of 18 months (January 2004-July 2005)	This study uses a study analysis retrospective	There were 503 cases of head injury aged <15 years who came for treatment but only 196 cases had CT- scan results. From the analysis results there were 37 (18.9%) cases of patients with intracranial bleeding, 159 (81.1%) without bleeding.
10	Seyyed Mahdi Zia Ziabari, <i>et.al.</i>	<i>Int J Burn Trauma</i> (2022)	Research purposes This is For evaluate CT scan findings of the brain in children with head	Children are divided into two age groups: under two years and 2-12 years.	In this research, the analytical research type	Based on the results of the study, the average age of the patients was 66.01 months and 88 of them

NO	Authors	Publisher	Objective study	Subject	Method	Results
			trauma light and its relationship with signs and symptoms clinical For avoid intervention that is not need in many child with MHT.		was used. with cross sectional study	were boys (56.4%). The most common CT scan images is EDH.
11	H. Mehta, <i>et.al</i>	<i>AJNR Am J Neuroradiol</i> (2020)	Research purposes This is For evaluate validity rapid MR imaging For replace CT in imaging act carry on head trauma patients.	Population study This is Patient child child with head trauma evaluated at Westchester Medical Center, a pediatric trauma center level 1.	This study uses a study analysis retrospective	103 patients children who undergo MR examination. The most common CT scan images is Extra-Axial Hemorrhage
12	Mustafa Calik, <i>et al.</i>	diagnostics (2022)	The purpose of this study was to draw attention to the use of cranial computed tomography (CT) scanning in the evaluation of children with head trauma under the age of 18 years, and to determine the utility of CT scanning in terms of cost-effectiveness.	Patients aged between 0 and 18 years, cared for at home Sick with head trauma and underwent a cranial CT scan.	This study uses a study analysis retrospective with cross sectional study	A total of 26,412 patients under the age of 18 who were treated in the emergency unit for head trauma and underwent CT scans cranial were analyzed. They had a mean age of $7.74 \pm 5.66$ years. Overall, 26,363 (99.8%) of these patients had a GCS greater than 14. The most common CT scan features is soft tissue trauma with 98.1 %.

NO	Authors	Publisher	Objective study	Subject	Method	Results
13	Surendra Maharjan, <i>et. al</i>	<i>Asian Journal of Medical Science</i> (2021)	Research purposes This is For identify findings CT scan in suspected cases as injury head..	Population study This is patient with suspicion injury head not enough from 24 hours.	This study uses a study prospective with cross sectional study	Of the 317 patients studied, 198 (62.5%) were male and 119 (37.5%) were women. Injury head more often occurred in males. 80 (25.23%) were under 15 years old, 221 (69.73%) were between 16 and 65 years and only 16 (5.04%) were over 66 years old. The mean age was 28.57 years. In 239 (75.4%) patients, the CT scan results were normal. The most common cause from injury head is falls were found in 210 (66.2%) patients followed by RTA 82 (25.9%) and Attack Physical 25 (7.9%). Fell as reason injury head more often occurs in children and the elderly, while RTA is more often occurs in adults and adolescents. Findings The most

NO	Authors	Publisher	Objective study	Subject	Method	Results
						common positive on CT is Bruises were found in 32 (10.1%), 25 (7.9%) had SDH, 11 (3.5%) patients experienced EDH, 10 (3.2%) experienced SAH. Headache found No specific For predict positive CT findings.
14	Fumiaki Tokioka, <i>et al</i>	BMJ Open (2023)	This research aims to determine the frequency of radiographic head injuries due to falls in hospitalized patients and investigate the characteristics of these patients.	Population study This is patient who admitted Once fall and experience bruise on the head as well as confirmed patient experience bruise on the head However No willing For interviewed related the fall.	Study This nature studies cohort retrospective	In general Overall, 834 patients adults (662 confirmed cases and 172 suspected cases ) were included. The most common CT scan images is acute subdural hematoma.
15	Haomin Li, <i>et.al</i>	Brain Injury (2024)	Research purposes This is For create an injury database head pediatric based on cranial CT examination and explore characteristics its epidemiology.	Population research This is patient child with head trauma	This study uses a study analysis retrospective	Reviewing data from record 52,821 children who experienced injury head for 7 years, the cause injury head the most common child is falls (58.3%), accidents (26.0%), being hit /

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						crushed / struck (13.9%), violence (1.5%), and incidents related to with sports ( 0.3 %). whole, part big from those who are injured is child men, namely 62.2% of all cases. Skull fractures are the most common occurs in the parietal bone (9.0%), followed by the ulnar bone occipital (5.2%), frontal (3.3%) and temporal (3.0%). Most of bleeding intracranial occurs in the epidural (5.8%), followed by subdural hemorrhage (5.1%), subarachnoid (0.9%), intraparenchymal (0.5%), and intraventricular (0.2%). Spring and summer fall show more Lots incident than season other.
16	David M Notrica, <i>et.al</i>	<i>Journal of Pediatric Surgery</i> (2020)	Study This evaluate risk clinical and social related with fatal and	Samples in research This that is suspected patient suffered head trauma	This study used a retrospective	Evaluation forensics against 783 children 5 years old with head

NO	Authors	Publisher	Objective study	Subject	Method	Results
			non - fatal head trauma.	heavy aged not enough or The same with 5 years	study.	trauma fulfil criteria inclusion ; 25 of them were fatal with a median [IQR] age of 23 [4.5-39.0] months. Of the 758 non - fatal patients, the median age was 7 [3.0-11.0] months ; 59.5% were male ; 435 patients (57.4%) had skull fractures, 403 (53.2%) had bleeding intracranial.
17	First Class Tanaanantarak, et al.	Chinese Journal of Traumatology (2024)	The aim of this study was to explore clinical characteristics that may predict ICH on brain CT in pediatric TBI patients, to assist physicians in deciding the use of brain CT.	The population is children under 15 years old with TBI treated in the emergency unit emergency and undergoing CT brain imaging	Study This is study cut latitude retrospective	Average age of included cases is 7.7 years ( range interquartile range (IQR) 3.5 e 12.6 years ). ICH was found in 98 (20.63%) patients child based on CT scan results of the brain. Most namely jaw fracture top and skull.
18	Bartlomiej Kulesza, <i>et.al</i>	<i>Indian Journal of Surgery</i> (2021)	The purpose of study This is For serve description different clinical conditions associated with patients being treated	Subjects in the study This is patient with injury head	This study used a retrospective study.	Study This involving a group of 128 patients with injury brain traumatic. All patient done operation. With use analysis statistics, we compare

NO	Authors	Publisher	Objective study	Subject	Method	Results
			through surgery for post- traumatic EDH and SDH.			factors studied in patients undergoing surgery because of EDH and SDH. Patients with SDH aged more old than patient with EDH. Most frequently, extra-axial hematoma influence man.
19	Emma CM Burns, <i>et.al.</i>	<i>Society for Academic Emergency Medicine (2022)</i>	Study This arranged For investigate characteristics of skin hematoma which head is related with improvement chance of injury intracranial in children aged not enough from 17 years old who came to the ER after injury head mild and whether the underlying linear skull fracture can explain connection This.	The population of this study was children who came to the ED with mild head injury between July 2001 and November 2005.	Types of research This with method cohort prospective.	Intracranial injury occurred in 159 (4.1%) patients. The most common CT scan findings were namely linear skull and acute brain lesion ( epidural hematoma).
20	Shunsuke Amagasa et al.	Journal of Pediatric Neurosurgery (2020)	Study This aiming For verify injury intracranial consequence fall from height and knowing	Subjects in the study This is children under 2 years with head trauma consequence fall	This study used a retrospective study.	Among the 1494 patients included in analysis this, 392 patients classified to in group a fall witnessed



NO	Authors	Publisher	Objective study	Subject	Method	Results
			characteristics of head trauma consequence fall from height, required head trauma investigation with witnesses who are not own connection blood.			by someone other than family, and 1102 patients classified to in group fall that does not witnessed by someone who is not family. Prevalence rate injury intracranial, skull fracture, epidural hematoma, and bleeding subarachnoid is same among second group. The prevalence rate of subdural hematoma in the group that fell witnessed by someone who is not family in a way significant more low compared to with group others ( $p = 0.027$ ). There is no patient with subdural hematoma, retinal hemorrhage, or symptom remainder neurological in the group that fell witnessed by someone who is not relatives.

Twenty The articles were analyzed using a synthesis table to see the variables that investigated by each study about description head trauma radiology consequence violence against children. Out of 20 article that discusses description head trauma radiology consequence violence against children, 18 articles mentioned type most frequent sex suffered head trauma consequence violence against children is in children with type sex man men ( journals 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20), and 2 articles other No mention type genitals in head trauma consequence violence against children ( journal 2, 15). From 7 articles mention GCS score ( journal 1, 6, 10, 12, 16, 17, 19), while For inspection head trauma radiology consequence violence against children based on overview, 12 articles mention most CT Scan images is bleeding (subdural hematoma, epidural hematoma, intracerebral hematoma) ( journals 1, 3, 4, 6, 8, 9, 10, 11, 14, 15, 18, 19 ), 5 articles other say linear diagram skull fracture ( journal 2, 7, 16, 17, 20), 1 article mention CT scan image of contusion cerebral (journal 13) and 1 article other mention CT scan image s oft tissue trauma (journal 12).

Wrong One strength a number of article the is use data Which representative in a way national and also international with edition latest as well as amount sample Which big Which adequate For analyze description imaging head trauma radiology consequence violence against children.

Wrong One limitations Which need be noticed is that it requires relatively large or numerous research subjects, assuming that there are quite a lot of independent variables that have an influence, it is less able to describe the disease development process accurately. Source data Which available in studies literature Possible No complete For answer all question study. Besides That, some articles use coverage population Which not enough. In analysis description imaging head trauma radiology consequence violence against children on article the restricted only on discussion age and type sex as well as description head trauma radiology However researcher Then look for a number of journal other For discuss about causes of head trauma that causes violence against children in hospitals. With thus, the author recommend study time front with methodology Which more Good, size until I that more big, And more Lots variable. Required study more carry on For fight i and an lower head trauma figures consequence violence against children.

## Discussion

Head trauma is injury mechanics who are direct or No direct about head that causes wound on the skin head, bone fracture skull, torn membrane brain, and damage network brain, as well as result in neurological disorders. <sup>9</sup> According to *Brain Injury Association of America* a, injury head is a damage to the head, not nature congenital or degenerative, but caused by an attack or clash physique from outside, which can reduce or change the awareness which gives rise to damage ability cognitive and functional physical. <sup>6</sup> In search a number of articles in literature it also discusses that pneumonia is more often happens to children man man. This is due to Because existence difference between activity daily life men and women who cause incident injury This more Lots happens to boys. <sup>10</sup> Things that happen to boys in line with research conducted by Jacques du Plessis, et al (2022) found that during period research, as many as 100 patients pediatric with blunt TBI light referred to For CT

imaging at home Sick academic. As many as 65% of patients is men and 35% women.<sup>11</sup> Research Another study was also conducted by Süleyman Şahin, et al (2024) and found that that based on the gender of the 129 patients, 83 (64%) were male, and 46 (36%) were female.<sup>12</sup> This in line with research by Seyyed Mahdi Zia Ziabari et al (2024) found that based on gender the most is man man as much as 88 (56.4%).<sup>13</sup>

Head trauma shared so 3: injury head mild (CKR), injury head moderate (CKS), and injury head weight (CKB). CKB has a number incident about 10% of total injuries head. In addition to deaths caused by CKB, patients injury head prone to happen complications when patient treated in hospital. Complications that occur, for example infection, pneumonia, sepsis and multi-organ failure.<sup>14,21</sup>

Head trauma in children can classified based on the Pediatric Glasgow Coma Scale. Head trauma light with scale early Glasgow coma 13-15, head trauma currently with initial GCS 9-12, and head trauma heavy with a starting GCS of 3-8. Low Glasgow Coma Scale show more and more the weight injury brain and more poor prognosis. Classification based on age namely : child age not enough from 2 years and children age more from 2 years. Head trauma in children not enough from 2 years have Characteristics : Examination more difficult, damage generally asymptomatic, often happen rift bone head due to head trauma light d. often happen damage brain. Classification of head trauma can determine prognosis and further management.<sup>15</sup>

Symptom or sign injury head light can in the form of existence lump or swelling in the head area, wounds, or bruise on the skin Headache, dizziness and pain head, experiencing confusion and difficulty concentrate, balance disturbed, vision blurry, ear ringing, and easy tired. Meanwhile, in case of injury head heavy Can found existence decline awareness or coma, nausea and vomiting great, disturbance memory, talk lisp, difficulty walk and guard balance, change behavior, seizures, blood or fluid clear flow from ear or nose.<sup>16</sup>

Imaging beginning with *CT scan* especially used For identify acute primary injury of great importance For diagnose injury brain traumatic, for example epidural, subdural, and subarachnoid hemorrhage. On the other hand, monitoring imaging continuation is also very important For identify injury secondary, such as herniation and brain edema. The following This is a number of description *CT scan* of injury traumatic brain.<sup>17</sup>

Based on research conducted by G. Orman et al (2019) found The results of *CT scan* data on head trauma patients due to violence in children, the most common being subdural hematoma (83.3%).<sup>18</sup> Study Another research conducted by Haomin Li, et al (2024) is known that *CT scan* photo of a patient with head trauma due to child abuse, part of it big bleeding intracranial occurs in the epidural (5.8%), followed by subdural hemorrhage (5.1%), subarachnoid (0.9%), intraparenchymal (0.5%), and intraventricular (0.2%).<sup>19</sup>

## CONCLUSION

Based on the results of the identification and review in this literature review, then can made conclusion that description head trauma radiology consequence violence against children Lots happens to children men, with description radiology The most common *CT scan* appear is bleeding intracranial (subdural hematoma, epidural hematoma, intracerebral hematoma).

## ACKNOWLEDGEMENTS

Gratitude to Allah SWT who has bestowed His grace and blessings upon the author. Then especially to the author's parents who have given encouragement, facilitated and accompanied the author's steps with moral and material support and prayers and blessings. Furthermore, to the supervisor and to the examiners who always directing and guiding writer in Compiling literature this. And all related parties that I cannot mention one by one who have supported me all this time.

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