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The Relationship Between Complex Trauma and Post-Traumatic Growth Among Adolescents Living in Kibagare Informal Settlement

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Abstract

The relationship between trauma and post-traumatic growth in adolescents examines how the pathological effects of trauma are counteracted with great, long-lasting developmental growth impacts. The present study examined the relationship between complex trauma and post-traumatic growth among adolescents living in Kibagare Informal settlements. A descriptive-analytic quantitative design was used to measure the exposure to complex trauma outcomes of PTG elements of adolescents aged 8 to 18 years in the Kibagare Informal Settlement. The study's target population was adolescents from 3,000 households of Kibagare Informal Settlement attending St. Martin's School. Multi-stage sampling was conducted and the sample used in the study was 265 participants. The Child and Adolescent Trauma screening (CATS) tool was used to assess for exposure to traumatic life events and Post-Traumatic Growth Inventory for Children Revised (PTGI -C-R) for measuring post-traumatic growth elements. A socio demographic and social support questionnaire was also used. The results showed that despite adolescents being exposed to complex trauma, they were capable of experiencing PTG. The study found a strong significant relationship between complex trauma and post-traumatic growth components and a medium to weak association of complex trauma components and post-traumatic growth elements. A Chi square and the Phi-Cramer's V test were used. The was a high association of exposure to community violence PS, χ^2 (6) = 132.137, p< 0.001, Phi of 0.706 and Cramer's V of 0.316; NP χ^2 (6) = 107.597, p< 0.001, Phi of 0.637 and Cramer's V of 0.285; AL, χ^2 (6) = 102.360, p< 0.001, Phi of 0.622 and Cramer's V of 0.278. Developing and nurturing PTG among adolescents who are exposed to complex trauma may foster a change in their core belief after a traumatic experience.

Keywords: Post-Traumatic Growth; New Possibilities; Personal Strength; Spiritual Change; Appreciation for Life; Adolescents; Kibagare Informal Settlement

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Introduction and Background

Traumatic events in childhood or adolescence have far-reaching and long-lasting effects on their lives and development (Carney, 2008). Complex trauma is described as exposure to multiple stressful, traumatic experiences in the early years of life within a caregiving system. It may encompass neglect, witnessing domestic and emotional violence, being in a refugee camp, community violence, separation from family, physical and sexual abuse (The National Child Traumatic Stress Network, 2013; Van der Kolk, 2005; Wamser-Nanney & Vanderburg, 2013). Adolescence is a stage between childhood and adulthood. It can be defined from a biological, psychological, social, and cultural perspective (Courtois, 2004). The United Nations Children's Fund (2011) report considers adolescence as being two-fold: early adolescence ages 10 to 14 years and late adolescence ages 15 to 19 years; while in Kenya, it is anyone below the age of 18 years (National Council for Law Reporting, 2010). In the current study, an adolescent was anyone between the ages of 8 to 18 years, living in Kibagare Informal Settlement.

Adolescents experience biological, psychological, socio-cultural, and spiritual developmental changes (Carney, 2008). During this critical adolescent growth period, they are particularly vulnerable to traumatic events. Exposure to adversity at this stage, such as neglect, abuse and poverty, have biological effects and may expose individuals to early aging, cardiovascular illness, cancer and diabetes (American Psychological Association (APA), 2020). According to the National Child Traumatic Stress Network (2013), traumatic experiences or exposure causes adolescents to have low immunity, poor sleep patterns, poor impulse control and an increase in psychosomatic problems. Therefore, experiencing trauma during the period of such fast changes and growth spurts may adversely affect their developmental phase. The adolescents would find it very hard to adapt to the pubertal stage and work through trauma at the same time.

According to the Bio ecological theory by Bronfenbrenner, adolescents' well-being and development are influenced by the various interactions within their environment. The environment, according to Bronfenbrenner, affects how children function as a result of complex trauma. These include neglect, natural disasters, physical and sexual abuse, war community violence among others. Exposure to more than one traumatic event brings about stress and support systems are disordered (Hoffman & Kruczek, 2011). The opposite is true,

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Bronfenbrenner's theory reports that those who experience trauma can also experience post-traumatic growth. The subsystems can allocate or inhibit coping in the event of complex trauma. The micro, exo and macro systems can spur post-traumatic growth by providing emotional, social and spiritual support to those exposed to complex trauma (Hoffmam & Kruczek, 2011; Koeing, 2006; Milam et al., 2005).

Research in psychology in the past tended to focus only on the adverse sequel of traumatic events such as depression and anxiety (Lopez-Castroman et al., 2015; Wamser-Nanney & Vandenberg, 2013) ; heart disease (Stirling & Amaya-Jackson, 2008), and post-traumatic stress disorder (Zhou et al., 2015). However, according to the school of positive psychology, there may be positive impact after traumatic experiences such as finding new goals, ideals and priorities, appreciating life, gratitude, rewarding interpersonal relationships, discovery of personal strength all referred to as post traumatic growth (PTG) (Tedeschi & Calhoun, 2004). Post-Traumatic Growth (PTG) is defined as a positive psychological transformation that is experienced during and after exposure to challenging life circumstances (Tedeschi & Calhoun, 1996).

Globally, there is literature that supports post-traumatic growth or benefits in many diverse areas. A longitudinal study of how child survivors adjusted psychologically was carried out by Zhou et al. (2015) after the Wenchuan earthquake. Their study involved 354 adolescent survivors of ages 14 – 20 years. The study had 189 girls and 165 boys. Zhou and colleagues used the Core Beliefs Inventory (CBI) to measure challenges to core beliefs. Their findings indicated that PTSD and PTG coexisted amongst the Wenchuan earthquake survivors. Further, PTSD and PTG occurred in response to any stressor or traumatic event that provided a challenge. Their study revealed high post-traumatic growth especially in the domain of relating to others who provided social support. According to McCormack and McKellar (2015), a heinous act of terrorism can cause fear, horror, and distress but it can also bring positive change and psychological growth in communities, individuals, and society. McCormack and McKellar carried out a longitudinal study of those who were exposed to the Bali bombings of 2005. Their study revealed that post-traumatic growth was achieved through anger and vigilance. They also gave an example of September 11, 2001, where individuals reported experiences of gratitude, interest, and love (McCormack & McKellar, 2015).

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Research has focused on sole types of injustices or violations such as sexual or physical abuse. Yet experiencing severe and repeated trauma can have a relentless after-effect and can place these adolescents at risk for further traumatic exposures (Cook et al., 2005). Twizeyemariya et al. (2017) state that witnessing and experiencing multiple violence puts children and adolescents at a high risk of developing psychological problems in their future life; and they may end up being victims or perpetrators starting from early adolescence. Surveys carried out in urban medical care facilities revealed that adolescents who were receiving treatment for substance abuse had been exposed to early childhood multiple traumatic events (Khoury et al., 2010). Therefore, it is important for the community, family, friends, educators, and teachers, to notice, care and meet the needs of adolescents' during times of disaster, stress, pressure, and exposure to a traumatic event.

A study by Marshall (2016) of females aged between 13 and 18 years old, revealed girls were vulnerable to anxiety disorders when exposed to traumatic events in their puberty phase. Further, evidence by Stevens et al. (2018) reported that adolescents from informal settlements or low-income neighborhoods were likely to be exposed to early childhood traumatic events, leading to their amygdala's inability to control fear. Informal settlements, based on the UN-Habitat Programme, are defined as residential areas where a group of housing units has been constructed on land to which the occupants have no legal claim, or which they occupy illegally (Huchzermeyer et al., 2018).

Although global and regional studies on complex trauma exist, there is little attention on adolescents in informal settlements in Kenya. Harder et al. (2012) alluded to post-traumatic stress disorder outcomes after Kenya's adolescents' living in informal settlements were exposed to traumatic incidents but does not compare it to PTG outcomes. The current study was therefore designed to assess the relationship between complex trauma and PTG among adolescents living in the Kibagare Informal Settlement in Nairobi, Kenya.

The less commonly explored aspect of the positive outcomes that result from exposure to traumatic life experiences exposes the gap that necessitates research that focuses on growth after exposure to traumatic experiences for the understudied adolescent population (Substance Abuse

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and Mental Health Services, 2014). PTG shows that life's stressors may also bring positive change and psychological growth in individuals, communities, and society.

The theory of PTG was founded by Tedeschi and Calhoun (2004). The theory suggests that growth occurs after one's struggle with very challenging stressful and traumatic events. According to Tedeschi and Calhoun (2004), PTG is synonymous with the pain, symptoms and dysfunction that is experienced as a result of exposure or experiencing complex trauma. Moreover, their theory explains possibility of growth in suffering in five main areas, New Possibilities (NP), Relating to Others (RO), Personal Strength (PS), Spiritual Change (SP), and Appreciating life (AL).

Studies worldwide rarely focus on positive results or growth from negative life events. Yet, research shows that adolescence, which is defined as the period of puberty before adulthood may positively experience growth (PTG) after adverse or negative events in their lives (Courtois, 2008; Grubaugh & Resick, 2007; Ickovics et al. 2006, Jansen et al., 2011; Kilmer et al., 2014 ; Marshall 2016; McCormack & McKellar 2015; Montegomery, 1998; Tedeschi & Calhoun, 2004; Vloet et al. 2017; Wagner et al., 2016; Zhou & Wu, 2016). The positive growth may occur despite an adolescent being at a phase in their development that is often challenging.

There are a few studies in Kenya with regard to post-traumatic growth, the few studies that have been carried out all focus on the adult population (Post-traumatic growth and post-traumatic stress disorders among 18–59-year-olds in Nairobi (Usunobun et al., 2021); Processing strategies and Post-traumatic growth among survivors of Garissa University (Asatsa et al., 2018); Survivors of Multiple trauma in Kenya (Langat, 2018). The current study bridged the gap by documenting complex traumas adolescents in informal Settlements have been exposed to and further assessed PTG and the relationship and association of complex trauma components and post-traumatic growth elements.

It is also evident that most studies on trauma and PTG have mostly focused on single event traumatic occurrences such as hurricanes (Chan & Rhodes, 2013) and sickness (Husson et al., 2017). In particular, Chan and Rhodes (2013) study that focused on psychological stress and post-traumatic growth in the context of hurricane Kartrina while Husson et al. (2017) study

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examined post traumatic growth among adolescents and young adults with cancer. Other studies that focus on single traumatic events include a study whose main focus was predicators of post-traumatic stress and post traumatic growth in childhood cancer survivors (Koutana, 2017).

Additional studies include, multi ethnic terror attack (Miliam et al., 2014) after the September 11 terror attack, genocide. Blackie et al. (2017) focused on finding post traumatic growth in perpetrators of the genocide in Rwanda and many others. However, this current study focused on exposure to multiple traumatic events that are continuous (complex trauma) and (post-traumatic growth) in adolescents. Complex trauma was the exposure variable, while Post-traumatic growth was the outcome variable with mediating moderating factors including after-school clubs and activities, social support, age, religion and gender.

Methodology

A descriptive-analytic and quantitative design was used in this study. The research was conducted in 2020 using a sample of 265 adolescents between 8 -18 years of age living in the Kibagare Informal Settlement of Nairobi County, Kenya from students of SMP School. The inclusion criteria were as follows: (1) Adolescents between 8-18 years old living in Kibagare Informal Settlement (2) in grades 4,5,6 and 7. The study applied multi-stage sampling techniques; it involved the selection of respondents from an ordered sampling frame in order to get a sample size. The analysis part of the design was used to establish the relationships and associations between complex trauma and post-traumatic growth in adolescents living in Kibagare Informal Settlements. The population was similar as they all lived in Kibagare informal settlements and attended SMP school. They were all exposed to multiple types of traumas, such as natural disasters, exposure to domestic violence, sexual abuse, traumatic grief, medical trauma and community violence. The PTGI-C-R had a scale measurement, while the CAT had a nominal measurement. Hence chi-square test was conducted.

The study involved minors, therefore, verbal permission was obtained from the adolescents and written consent from their parents or guardians. A permit from the government was obtained, and permission to carry out the research was gained from the institutional review board, the education office and the head teacher of SMP School. The assessment was conducted in the

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safety of their classrooms. Under those conducive requirements, the head teacher and parents were briefed on the risks of taking part in the study. Any adolescents feeling unsafe or anxious were referred to the guidance and counselling teachers for counseling. Adolescents who felt, reported or showed symptoms of trauma, sexual and physical abuse had a referral procedure treatment in place. The referral list included the head of school, the guidance and counselling department, and the gender violence and recovery centre at Nairobi Women's Hospital. All guidelines about research with minors were adhered to.

The researcher developed a socio-demographic questionnaire to collect background information. The questionnaire was used to ensure the research assessed the right target group. The question on age was used as the inclusion and exclusion criteria; gender was used to determine whether there were any major differences between the gender in exposure to traumatic experiences and post-traumatic growth. After school sports activities and clubs' involvement, were also assessed. The questionnaire assessed the association of socio demographic factors and post-traumatic growth.

The Child and Adolescent Trauma Screen tool was used to obtain information on the type of potentially traumatic events that adolescents living in Kibagare were exposed to. It is a tool that is based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), developed by Prof. Lutz Goldbeck (PhD) and Prof. Lucy Berliner (PhD) in 2014. It is a self-report assessment tool used for 7 to 17 year olds with a 15-item nominal scale measurement checklist. Its internal validity has been reviewed in several populations. The tool was adapted to measure complex trauma. The 15 nominal questions were clustered into six main types of trauma; natural disaster (ND), community violence (CV), domestic/family violence (DV), sexual abuse (SA), traumatic grief (TG), and medical trauma (MT).

The PTGI-C instrument developed by Tedeschi and Calhoun (1996) measured positive trauma outcomes after exposure to a traumatic events. PTGI-C is a 10-item questionnaire, an adaptation of Tedeschi and Calhoun's 21-item post-traumatic growth inventory 1996. Items of the PTGI-C-R were: 1) relating to others, 2) Personal strength, 3) Appreciation for life, 4) Spiritual change and 5) New possibilities. Each item is rated on a 4-point scale ranging from 0 (No change), 1 (a

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little change), 2 (some change), to 3 (a lot of change). High scores are indicative of increased PTG scores which range from 0 to 30.

The response rate of 265 adolescents was 90%, and the demographic information captured were age, gender, religion and involvement in after-school sports/ teams or clubs. Having after-school sports and clubs as part of the demographics was important because these activities allow adolescents to congregate. In these congregations, the adolescents experience social support, deal with emotional distress, and thus experience PTG. The mean age was 12.9 years (SD=1.246). Female students were 137 (51.7%) compared to 128 male students (48.3%).

Results

The findings revealed the adolescents' religious affiliation in this order: Catholic 49.1%, Protestant 21.1%, African Traditional Religion 7.2%, Islamic 6.8% and a group of 15.8% indicated their religion to be other. Most (86.8%) of the respondents participated in sports teams or clubs.

Complex trauma

Complex trauma was assessed using the Child and adolescent screening tool (CATS) youth-report. The types of complex trauma adolescents living in the informal settlement were exposed to included natural disaster (68.7%), community violence (52.8%), domestic violence (58.7%), sexual abuse/ violence (7.9%), traumatic grief (62.1%), medical trauma (47.2%) and lastly other scary or stressful events (36.2%).

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Table1: Descriptive Statistics for Complex Trauma

	Children	
	No %	**Yes %**
Natural Disaster (ND)		
Serious natural attack	**31.3**	**68.7**
Community Violence (CV)		
Robbed by threat, force, or weapon	67.2	32.8
Slapped, punched, or beaten up by someone, not in your family	30.6	69.4
Seeing someone slapped, punched, or beat up in your community	21.5	78.5
Attacked stabbed shot at or hurt badly	75.5	24.5
Seeing someone attacked, stabbed, shot at, hurt badly, or killed	44.5	55.5
Being around post-election violence	43.8	56.2
Average	**47.2**	**52.8**
Domestic Violence (DV)		
Slapped, punched, or beat up in your family	29.8	70.2
Seeing someone slapped, punched, or beat up in your family	52.8	47.2
Average	**41.3**	**58.7**
Sexual Abuse (SA)		
Someone older touching your private parts	88.7	11.3
Someone forcing or pressuring sex	95.5	4.5
Average	**92.1**	**7.9**
Traumatic Grief (**TG)**		
Serious accident or injury	21.9	78.1
Someone close to you dying suddenly or violently	54.0	46.0
Average	**38.0**	**62.1**
Medical Trauma (MT)		
Stressful or scary medical procedure	**52.8**	**47.2**
Other stressful or scary events	**63.8**	**36.2**

Post-traumatic growth

Post-traumatic growth was measured using the PTGI-R-C. The descriptive statistical tests were mean (M) and standard deviation (SD). The mean value was interpreted as follows: $M < 0.5$ = No change (No growth took place), $0.5 < M < 1.4$ = a little (a little post-traumatic growth took place), $1.5 < M < 2.4$ = some (some post-traumatic growth took place), $M > 2.5$ = a lot of post-traumatic growth took place). The result was categorized based on the five classifications of the PTG; Relating to others (RO), Personal Strength (PS), Appreciation of life (AL), Spiritual Possibility (SP), and New Possibility (NP).

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Table 2: Mean and Standard Deviation for PTG

	N	Missing	Mean	Std. Deviation	Minimum	Maximum
Relating to other (RO)	265	0	2.2264	0.78435	0	3
Personal Strength (PS)	265	0	1.9321	0.68749	0.5	3
Appreciation of life (AL)	265	0	2.1528	0.77377	0	3
Spiritual possibility (SP)	265	0	2.517	0.74155	0.5	3
New Possibility (NP)	265	0	2.2434	0.76513	0.5	3

The mean and standard deviations for PTG elements were found to be spiritual possibility (SP) (M=2.517 SD=0.742), New possibility (NP) (M=2.23, SD=0.784), Relating to others (RO) (M=2.23, SD=0.784), Appreciating life (AL) (M=2.153, SD=0.774) Personal strength (M=1.932, SD=0.688).

Relationship between complex trauma and post-traumatic growth elements

To understand the strength of the association, the Phi-Cramer's V was used to test the strength of the association, with V>.5 showing a stronger association, V of 0.4 to 0.5 showing a medium association, V of 0.1 to 0.3 showing a weak association, and V of <.1 showing little if any association.

Table 3: Relationship between Natural Disaster and PTG

	Value	df	Asymp. Sig. (2sided)	Phi	Cramer's V
ND and PTG					
Relating to other (RO)	67.311a	6	0.000	0.504	0.504
Personal Strength (PS)	27.791a	6	0.000	0.324	0.324
Appreciation of life (AL)	58.386a	6	0.000	0.469	0.469
Spiritual possibility (SP)	34.005a	6	0.000	0.358	0.358
New Possibility (NP)	40.234a	6	0.000	0.39	0.39

The first chi-square was performed on ND as the first component of complex trauma and all the PTG components; RO, PS, AL, SP, and NP. As indicated, ND had a significant association ($p< 0.001$) with all the components of PTG. Using the Phi-Cramer's V test, RO had a stronger association, χ^2 (8) = 67.311, $p< 0.001$, Phi of 0.504 and Cramer's V of 0.504. AL, NP, and SP had medium association as follows: AL, χ^2 (6) = 58.386, $p< 0.001$, Phi of 0.469 and Cramer's V of 0.469; NP, χ^2 (6) = 40.234, $p< 0.001$, Phi of 0.390 and Cramer's V of 0.390; and SP, χ^2 (6) =

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34.005, p< 0.001, Phi of 0.358 and Cramer's V of 0.358. Lastly, the PS had a weak association, χ^2 (6) = 27.791, p< 0.001, Phi of 0.324 and Cramer's V of 0.324. This means the ND, as a component of complex trauma, had a positive and significant association with all the PTG components; stronger association with RO, medium association with AL, NP, SP, and a weak association with PS.

Table 4: Relationship between Community Violence and PTG

	Value	df	Asymp. Sig. (2sided)	Phi	Cramer's V
CV and PTG					
Relating to other (RO)	97.294a	6	0.000	0.606	0.271
Personal Strength (PS)	132.137a	6	0.000	0.706	0.316
Appreciation of life (AL)	102.360a	6	0.000	0.622	0.278
Spiritual possibility (SP)	77.477a	6	0.000	0.541	0.242
New Possibility (NP)	107.597a	6	0.000	0.637	0.285

The second chi-square was performed on CV as the second component of complex trauma and all the PTG components; RO, PS, AL, SP, and NP. Using the Phi-Cramer's V test all the association tests had stronger association as follows: PS, χ^2 (6) = 132.137, p< 0.001, Phi of 0.706 and Cramer's V of 0.316; NP χ^2 (6) = 107.597, p< 0.001, Phi of 0.637 and Cramer's V of 0.285; AL, χ^2 (6) = 102.360, p< 0.001, Phi of 0.622 and Cramer's V of 0.278; RO, χ^2 (6) = 97.294, p< 0.001, Phi of 0.606 and Cramer's V of 0.271; lastly, SP, χ^2 (6) = 77.477, p< 0.001, Phi of 0.541 and Cramer's V of 0.242. This means that CV, as a component of complex trauma, had a positive, significant association and stronger association with all the PTG beginning with PS, NP AL, RO, and the least was SP.

Table 5: Relationship between Domestic Violence and PTG

	Value	df	Asymp. Sig. (2sided)	Phi	Cramer's V
DV and PTG					
Relating to other (RO)	22.469a	6	0.033	0.291	0.206
Personal Strength (PS)	36.347a	6	0.000	0.37	0.262
Appreciation of life (AL)	51.681a	6	0.000	0.442	0.312
Spiritual possibility (SP)	24.125a	6	0.007	0.302	0.213
New Possibility (NP)	57.575a	6	0.000	0.466	0.33

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The third chi-square was performed on DV as the third component of complex trauma and all the PTG components; RO, PS, AL, SP, and NP. Using the Phi-Cramer's V test, the strength of the association was medium and weak. The medium association was on; NP, χ^2 (6) = 57.575, p< 0.001, Phi of 0.466 and Cramer's V of .330, AL, χ^2 (6) = 51.681, p< 0.001, Phi of 0.442 and Cramer's V of 0.312, and PS, χ^2 (6) = 36.347, p< 0.001, Phi of 0.370 and Cramer's V of 0.262. The weak association was on; SP, χ^2 (6) = 24.125, p=.007, Phi of 0.302 and Cramer's V of 0.213 and RO, χ^2 (6) = 22.469, p= 0.033, Phi of 0.291 and Cramer's V of 0.206. This means that DV as a component of complex trauma had a positive and significant association with all the PTG components; medium association with NP, AL, PS, and a weak association with RO and SP.

Table 6: Relationship between Traumatic Grief and PTG

	Value	df	Asymp. Sig. (2sided)	Phi	Cramer's V
TG and PTG					
Relating to other (RO)	45.034a	6	0.000	0.412	0.291
Personal Strength (PS)	37.059a	6	0.000	0.374	0.264
Appreciation of life (AL)	38.738a	6	0.000	0.382	0.27
Spiritual possibility (SP)	77.967a	6	0.000	0.542	0.384
New Possibility (NP)	42.721a	6	0.000	0.402	0.284

The fourth chi-square was performed on TG as the fourth component of complex trauma and all the PTG components; RO, PS, AL, SP, and NP. Using the Phi-Cramer's V test, only one component had a stronger association SP, χ^2 (6) = 77.967, p< 0.001, Phi of 0.542, and Cramer's V of .384. The rest had medium association as follows: RO, χ^2 (6) = 45.034, p< 0.001, Phi of 0.412 and Cramer's V of .291, NP χ^2 (6) = 42.721, p< 0.001, Phi of 0.402 and Cramer's V of 0.284, AL, χ^2 (1) = 38.738, p< 0.001, Phi of 0.382 and Cramer's V of 0.270, and lastly the PS, χ^2 (6) = 37.059, p< 0.001, Phi of 0.374 and Cramer's V of 0.264. This means the TG as a component of complex trauma had a positive and significant association with PTG, a stronger association with SP but a medium association with PS, NP AL, and RO.

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Table 7: Relationship between Medical Trauma and PTG

	Value	df	Asymp. Sig. (2sided)	Phi	Cramer's V
MT and PTG					
Relating to other (RO)	78.351a	6	0.000	0.544	0.544
Personal Strength (PS)	22.676a	6	0.000	0.293	0.293
Appreciation of life (AL)	56.396a	6	0.000	0.461	0.461
Spiritual possibility (SP)	38.340a	6	0.000	0.38	0.38
New Possibility (NP)	39.725a	6	0.000	0.387	0.387

The fifth chi-square was performed on MT as the fifth component of complex trauma and all the PTG components; RO, PS, AL, SP, and NP. Using the Phi-Cramer's V test, only one component had a stronger association RO, χ^2 (6) = 78.351, p< 0.001, Phi of 0.544, and Cramer's V of 0.544. Three components had medium association as follows: AL, χ^2 (6) = 56.396, p< 0.001, Phi of 0.461 and Cramer's V of 0.416, NP χ^2 (6) = 39.725, p< 0.001, Phi of 0.387 and Cramer's V of .387, and SP, χ^2 (6) = 38.340, p< 0.001, Phi of 0.380 and Cramer's V of 0.380. PS had a weak association χ^2 (6) = 22.676, p< 0.001, Phi of 0.293 and Cramer's V of 0.293. This means MT, as a component of complex trauma, had a positive and significant association with PTG, a stronger association with RO, a medium association with SP, NP, AL and a weak association with PS.

Table 8: Relationship between Sexual Abuse/Violence and PTG

	Value	df	Asymp. Sig. (2sided)	Phi	Cramer's V
SA and PTG					
Relating to other (RO)	28.109a	6	0.005	0.326	0.23
Personal Strength (PS)	24.102a	6	0.007	0.302	0.213
Appreciation of life (AL)	22.196a	6	0.035	0.289	0.205
Spiritual possibility (SP)	6.916a	6	0.733	0.162	0.114
New Possibility (NP)	46.295a	6	0.000	0.418	0.296

The last chi-square was performed on SA as the six components of complex trauma and all the PTG components, RO, PS, AL, SP, and NP, using the Phi-Cramer's V test. Only one component had medium association NP, χ^2 (6) = 46.295, p< 0.001, Phi of 0.418, and Cramer's V of 0.296. Three components had a weak association: RO, χ^2 (6) = 28.109, p= 0.005, Phi of 0.326 and Cramer's V of 0.230, PS χ^2 (6) = 24.102, p=.007, Phi of 0.302 and Cramer's V of .213, and AL,

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χ^2 (6) = 22.196, p< 0.035, Phi of 0.289 and Cramer's V of 0.205. SP had no significant association p= 0.733. This means SA, as a component of complex trauma, had a positive and significant association with PTG, a medium association with NP, and a weak association with RO, PS, and AL. It had no significant association with the SP.

Discussion

The positive and significant association between complex trauma and PTG confirms that complex trauma has both positive and negative effects on adolescents. According to the findings of this study, natural disasters had a significant positive association with all PTG components, especially with relating to others. This supports previous findings by Zhou et al. (2015) who studied child survivors after the Wenchuan earthquake and found that the survivors experienced both Post Traumatic Growth and adverse effects like post-traumatic stress disorder. However, the challenges experienced may also cause the victim to re-examine their core belief, assumptions and themselves. This self-examination provides adolescents that have gone through traumatic events with an opportunity to consider the positive aspects that may result from their traumatic experiences, which lead to Growth (Zhou et al., 2015).

A study by Zhou et al. (2015) reported positive changes in valuing family and friends in regard to relating to others. The study found that adolescents learnt to appreciate each new day, appreciating life after the Wenchuan earthquake. This was similar to the findings of this study that after exposure to natural disasters, adolescents in Kibagare showed strong growth in relating to others and in appreciating life leading to moderate growth. Zhoul et al. (2015) indicated growth though weak, in the association between exposure to multiple traumas and personal strength.; and a strong association of relating to others after exposure to natural disasters; this was in agreement with Marshalls (2015) who carried out a study of adolescents who experienced an earthquake in New Zealand in 2011. Findings showed high post-traumatic growth in the relationship domain amongst the adolescents.

Ickovics conducted a study (2006) amongst adolescents who had lost a loved one (traumatic grief) through a natural disaster. The study reported that the adolescents had experienced higher PTG compared to those who had reported interpersonal problems as their traumatic event. This

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revealed that those adolescents who had been exposed to natural disasters had a higher PTG than those who had been exposed to interpersonal traumatic events. Their findings agree with this study's findings that interpersonal traumatic events like domestic and sexual violence had a medium and weak association with PTG.

Joseph (2011) in his work with survivors of different types of traumatic events such as illness, bereavement, accidents, natural disasters, and terrorism, revealed that trauma could change an individual's religious view and commitment by increasing or lowering it. Joseph reported that an increase or decrease in commitment towards religion signified post-traumatic growth. This study showed a mostly medium to weak association between spiritual change and complex trauma response. However, Joseph reports that even a low or weak spiritual change is synonymous with post-traumatic growth.

In Africa, religion or spirituality is a way of life. Spirituality and religion enhance moral order in the community, and thus, it plays a major role in everyday living. The results of this study on the spiritual change component of PTG showed that over 90% of respondents reported being strong Christians and 6.8% Muslims.

A study by Koenig et al. (2001) reported that some individuals experienced low or weak spiritual change, especially if they felt abandoned by God and questioned God's love for them. Their study revealed that those exposed to serious illness experienced psychological growth, and religion offered them a sense of hope and comfort that enabled them to cope with their sicknesses. This study revealed a strong association between spiritual change and complex trauma since religion is a form of culture and identity in Africa. The site in which the study was conducted practices religion daily. Chan and Rhodes (2013) study revealed that those who remain committed to their religion after adversity tend to experience a higher PTG. All religions encourage their members to think positively, appreciate life, and honour relations (Miliam et al., 2014). They encourage their members to get together, share their problems, help each other, listen to each other, love each other and not judge anyone. A Chi-square on religion and all PTG components, relating to others (RO), new possibilities (NP), personal strength (PS), spiritual possibilities (SP) and appreciating life (AL) showed a strong and significant association with PTG components RO, AL, SP, PS with a $p<.001$ and no significant association with NP.

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Ulloa et al. (2016) agree that it is difficult to find adequate literature on psychological growth after experiencing sexual abuse. Their study had 1863 female participants who had experienced child sexual abuse and assault-related factors. They reported that child sexual abuse was unrelated to post-traumatic growth. This is reflected in the findings of this study, where sexual abuse had a mostly weak to low association with all the components of post-traumatic growth. Only new possibilities had a medium association with sexual abuse. Only one component had medium association NP, χ^2 (6) = 46.295, p< 0.001, Phi of 0.418, and Cramer's V of 0.296. Three components had a weak association: RO, χ^2 (6) = 28.109, p= 0.005, Phi of 0.326 and Cramer's V of 0.230, PS χ^2 (6) = 24.102, p=.007, Phi of 0.302 and Cramer's V of .213, and AL, χ^2 (6) = 22.196, p< 0.035, Phi of 0.289 and Cramer's V of 0.205. SP had no significant association p= 0.733. This is supported by Grubough and Resnick (2017) who confirm that sexual violence cases are normally underreported, and there is often the fear of stigma and retaliation. Ilagan (2016), an investigative journalist, cites Stumpf, director of legal services at Network for Victim Recovery of DC, who reports the impediment to reporting sexual abuse include guilt, fear and shame. Statistics in the United States and Kenya report sexual violence as the most unreported crime (Crime Scene Investigations, 2008; Kuadili, 2023).

In conclusion, complex trauma has both positive and negative effects on the victims. The findings in this study reveal that an adolescent living in Kibagare Informal Settlements who had complex trauma had posttraumatic growth. The results revealed that adolescents who had experienced or been exposed to natural disasters, community violence, traumatic grief and medical trauma had a strong to medium significant association with the components of PTG. Adolescents that had been exposed to domestic violence and sexual violence showed mostly a weak association with the PTG components.

This study recommends that interventions to promote growth should engage the whole community, clergy/spiritual leaders, school, personal health professionals and caregivers. For growth to occur, it would be important for the whole community to understand signs and symptoms of trauma and post-traumatic growth to help adolescents cope with the aftermath of exposure to complex trauma. This will help them enhance the adolescent's positive psychology to improve their lives despite having gone through a traumatic event. The religious leaders

around the informal settlements should be actively involved in offering spiritual guidance to adolescents exposed to complex trauma to increase spiritual growth. Community mental health centres should be instituted in informal settlements to educate people on the effects of traumatic experiences and coping strategies to overcome negative impacts on adolescents.

Therefore, the study concludes that the government and relevant authorities in the informal settlement need to offer the requisite support to ensure that adolescent who experiences complex trauma can gain post-traumatic growth to enhance their well-being.

The therapist or mental health practitioner's responses and reactions will go a long way in influencing areas of strength and growth in self and how adolescents relate to others. They should use art, graffiti or media to encourage victims to tell their narratives to enhance growth. Routine screening should be carried out amongst the adolescents in the informal settlements to ensure that post-traumatic growth-focused interventions are implemented.

This study was limited to Kibagare Informal Settlement in Nairobi. Therefore, a study can be conducted in other informal settlements in Kenya and compare the findings with the findings of this study. It would be important to carry out studies on gender and complex trauma. In this study, gender had no significant association with all types of complex trauma except medical trauma. Further, research on complex trauma using a socio-demographic and social support standardized tool may yield different results. A qualitative component for assessing taboo topics such as sexual abuse /violence and domestic violence would be helpful.

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