Psychosocial background of female and male convicted of Intimate Partner Homicide

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Background
Homicide is an important cause of premature mortality globally, but evidence for the magnitude of homicides by intimate partners is scarce and hampered by the large amount of missing information about the victim–offender relationship. Intimate partner violence is a serious, preventable public health problem that affects millions of Americans. Violence between intimate partners ranges from verbal abuse to physical violence, with lethal outcome at the far end of the spectrum. The term 'intimate partner violence' describes physical, sexual, or psychological harm by a current or former partner or spouse. Partner homicide differs from other form of mass murder in that the murder kills a family member who is a loved one rather than an anonymous person.

Aim
To identify sociodemographic and criminological characteristics in perpetrators of intimate partner homicide (IPH); to identify personality traits of those who commit IPH; to identify to what extent IPH experienced mental illness and mental disorder, before or in connection to the offense; and to investigate the associated risk factors to commit homicide of an intimate partner, such as substance use.

Patient recruitment
After taking a written approval from Al-Azhar University Faculty of Medicine Ethical Committee and from Ministry of Health General Secretariat of Mental Health Training Department and an oral consent from the offenders, a sample was taken of all male (35) and female (two) individuals, aged 18 years or older, who were convicted of homicide of their intimate partner. These were new admitted cases who were evaluated after being referred from public prosecutor to check for the mental state of the offenders.

Methods
Each offender was subjected to the following: (a) clinical psychiatric assessment, (b) Homicide Questionnaire, (c) standardized psychiatric assessment by Mini International Neuropsychiatric Interview PLUS, and (d) standardized psychological assessment by Eysenck Personality Questionnaire-Revised, Wechsler adult intelligence scale, and the Alcohol, Smoking, and Substance Involvement Screening Test.

Results
The result revealed that sex is a risk factor for partner homicide, as of 37 offenders, only two were females compared with 35 males. Abusive parent and violence within the family were the most common risk factors inside the families. Overall, 51.4% of IPH offenders were highly educated, with significant relation between educational level and the crime, and most of them were employed at the time of crime. Of the sample, 32.4% were diagnosed as having antisocial personality disorder, 67.6% schizophrenia, and 32.4% mood disorders. Moreover, 29.7% had a past history of previous admission in a psychiatric hospital, and 40.5% were taking psychiatric medication. All offenders are tobacco smokers, and the most common substances used were cannabis, then opioid and sedative, and the least was alcohol beverages. Sharp instruments were the most common weapon used by the offenders, and the crime usually was done at night.

Keywords:
domestic homicide, forensic psychiatry, intimate partner homicide, spousal homicide

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Introduction

Intimate partner homicide (IPH) is the intentional killing of one's current or former intimate partner. This definition is consistent with that advanced by Carach and James, who defined IPH as a homicide involving 'spouses, ex-spouses, those in current or

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former *de facto* relationships, boyfriends, girlfriends, or partners of same-sex relationships: in other words, all relationships where the underlying dynamics are similar' (Kivisto, 2015).

Recognizing the similar dynamics underlying violence across the varied forms of intimate partner relationships, nearly one in seven homicides worldwide involve the killing of an intimate partner. Early descriptions emphasized the commonalities among those who perpetrated these offenses, including a description of a singular spousal-homicide syndrome (Smith *et al.*, 2014). Intimate partner violence (IPV) is all too common and takes many forms. It describes physical, sexual, or psychological harm by a current or former partner or spouse (Ellsberg and Emmelin, 2014). The most serious is homicide by an intimate partner (Catalano, 2009). At least one in seven homicides globally, and more than a third of female homicides are perpetrated by an intimate partner. Such violence commonly represents the culmination of a long history of abuse (Stöckl *et al.*, 2013). IPV is a leading cause of 14% of all homicides and injury-related deaths in the USA (Cooper and Smith, 2011). There were more than 7000 homicides annually in the USA on average, in which the relationship between the victim and perpetrator was known.

Approximately one in 10 of these homicides involved the killing of an intimate partner, and the proportion of IPHs relative to all homicides was highly stable from 2008 through 2012, ranging from a low of 9.4% of all homicides in 2008 to a high of 10.3% in 2010 (Kivisto, 2015).

Understanding the patterns of lethal violence among partner requires understanding some important sex differences between males and females. Globally, the number of women victims of intimate homicide is much higher than that of men victims. Sex differences in lethal violence tend to be remarkably consistent, on every continent, across every type of society (Buckner, 2018). There is some cross-cultural variation; there are some societies where women make up an equal number, or even the majority, of homicide victims, and they are known to commit more lethal violence than men. These societies generally seem to have low rates of homicide overall, as the United Nations Office on Drugs and Crime mentions in their 2013 study on global homicide (UNODC, 2013). Although both men and women kill their intimate partners, it appears that differences exist in the motivation behind the homicide in both cases. However, this appear to be inherent differences in both the nature and extent of male and female spousal homicide. Even when women react with violence toward men, they were three times more likely than men to be injured by spousal violence, more than twice as likely to report being beaten, and five times more likely to report being choked (Serran and Firestone, 2004).

However, evidence from various sources, such as police files, psychiatric reports, case law, and interview studies from different countries, clearly suggests that differences exist among women and men involved in intimate relationships who kill their partners. Men are predominantly the offenders, and women are much more likely to be the victims. In cases where women are the victims, researchers have found that jealousy, separation, or the threat of separation was the major precipitating factors, particularly when the victims were young women (Kauppakaari *et al.*, 2004).

The male proprietariness theory and the self-defense theory are presented as a means of understanding the sex differences in spousal homicide. These theories suggest that dynamics of the relationship play an important role in the increasing violence, which eventually results in homicide in certain instances. The implications of these theories are presented as a means of reducing the number of domestic homicides (Serran and Firestone, 2004).

More recent efforts have focused on identifying general risk factors for IPH – a range of historical, individual, and situational factors are integrated. Demographic features, psychopathology, and personality pathology in these individuals are synthesized across distinct posthomicide samples, and histories of general and domestic violence, as well as stalking, are considered. The precipitating influences of abandonment and jealousy are critically evaluated, and it is suggested that distinguishing envy from jealousy is essential (Grann and Wedin, 2002).

The issues of badness versus madness have been the subject of comments and concern for centuries. As psychiatry widened its horizons and penetrated legal systems of criminal justice, forensic psychiatry developed as the specialty within psychiatry that attempted to address the practical problems involved in dealing with people who committed offences (Fernando *et al.*, 2005). The researchers found that 'individuals with a history of psychiatric hospitalization were more likely to have been convicted of a criminal offense than persons with no history of psychiatric hospitalization,' a finding that was true for both men

and women. Depending on their sex and diagnostic categories, patients with psychiatric hospitalization histories were 3–11 times more likely to have criminal convictions than those without such histories (Hodgins, 2007). Nearly any psychiatric symptom can be associated with criminality, because symptoms can impair judgment and violate societal norms. For example, an individual with insomnia due to major depression may fall asleep while driving and kill a pedestrian, resulting in a manslaughter conviction.

Disorders that are more closely linked to criminality include antisocial personality disorder (ASPD), impulse control disorders (e.g. intermittent explosive disorder, kleptomania, pyromania, and pathological gambling), and paraphilias (e.g. voyeurism, exhibitionism, frotteurism, and pedophilia) (Franklin, 2014).

The prevalence of mental illness among persons involved with the juvenile and criminal justice systems is particularly high (Wasserman and Carpenter, 2005). Prospective studies point to hyperactivity (9–11), conduct problems (12–17), and early substance use (18–20) as predictors of later delinquency and criminal behavior (Costello and Keeler, 2003).

Aims

The study aims to identify sociodemographic and criminological characteristics in perpetrators of IPH; to identify personality traits of those who commit IPH; to identify to what extent IPH had mental illness and mental disorder, before or in connection to the offense; and to screen for alcohol, smoking, and other substance use as risk factors for IPH.

Patients and methods

This was a cross-sectional descriptive study that was carried out between the years 2014 and 2017 in Forensic Department in Abbasia Mental Health Hospital. The Department of Forensic Psychiatry is affiliated to the Ministry of Health and Population's General Secretariat of Mental Health. The cases of those accused of crimes of forensic psychiatry are provided to clarify whether or not the accused has a mental disorder and the consequent determination of criminal responsibility.

Ethical considerations

The study is based on forensic psychiatric investigations, which comprise sensitive personal information, such as an individual's mental health and criminal record. A written approval was obtained for this study from Al-Azhar University Faculty of Medicine Ethical Committee and from Ministry of Health General Secretariat of Mental Health Training Department, and an oral consent of the offender was obtained after explaining to them that this is only a scientific research work and has nothing to do with the investigation for public prosecution and does not affect the progress of investigations in the case.

Patient's recruitments

A sample of 37 (35 males and two females) perpetrators of IPH was taken from Forensic department in Abbasia Mental Hospital, aged 18 years or more, after being referred from public prosecutor for forensic psychiatric investigations. This sample represents all perpetrators during the period of research from 2014 to 2017.

Inclusion criteria

This study focused on partner homicide. The definition of a partner relationship was a relation in which the perpetrator and the victim were married. Furthermore, the crime included manslaughter and murder. The study participants included all male and female offenders who are transferred through the Public Prosecutor's Office to determine their mental strength and responsibility, aged 18 years or older, educated and noneducated, working and nonworking, and who had a history of psychiatric disorders and who did not.

Exclusion criteria

Offenders with delirium, dementia, language problems, and serious medical illness and uncooperative offenders were excluded.

Methods

Each offender was subjected to the following:

(1) Clinical psychiatric assessment: it was done by taking full psychiatric history and mental state examination.
(2) Homicide Questionnaire: it is a national confidential inquiry into Suicide and homicide by people with mental illness,directed by Appleby (version: 07/2010), that covered sociodemographic data and psychiatric/forensic history.
(3) Standardized psychiatric assessment:
    (a) Mini International Neuropsychiatric Interview PLUS: short structured diagnostic interview for *Diagnostic and statistical manual* (DSM-IV).
(4) Standardized psychological assessment:

(a) Eysenck Personality Questionnaire-Revised: it measures the major three dimensions of personality that account for most of the variance in personality.
(b) Wechsler adult intelligence scale.
(c) The Alcohol, Smoking, and Substance Involvement Screening Test.

Statistical evaluation of the results of the work

The results were analyzed using the statistical package of social science (SPSS) computer software program, version 10.1 (SPSS Inc., Chicago, Illinois, USA). Qualitative data were presented as mean±SD for normal distributed data and as medians and percentiles for skewed data. Qualitative data were presented in the form of frequencies and percentages. For normally distributed parameters, differences among groups were tested by Student *t* test and the one-way analysis of variance with post-hoc test, whereas for skewed data, Mann–Whitney rank sum test and Kruskal–Wallis analysis of variance were used. For qualitative data, differences among groups were tested using the Pearson's c^2 test and Fisher's exact test. To study the relationship between two variables, Pearson's and/or Spearman's correlation coefficients were calculated. All tests were tailed and considered statistically significant at *P* value less than 0.05.

Results

This study has been conducted on the offender who convicted his or her intimate partner :those were referred from public prosecutor to forensic department in "Abbasiyah Mental Health Hospital".

Table 1 Distribution of studied sample according to the sex and educational level and correlations of sociodemographic data with the crime

	n (%)
Sex	
Female	35 (94.5)
Male	2 (5.4)
Educational level	
Highly educated	19 (51.4)
Has secondary school	14 (37.8)
Illiterate	4 (10.8)
Employee	
Employee	32 (86.5)
Unemployed	5 (13.5)
Residence	
Urban	32 (86.5)
Rural	5 (13.5)
Age	
Range	26–50
Mean±SD	36.4±6.2

The following are the findings related to the study: Table 1

Family relations and the crime

Table 2

Psychiatric history

Table 3

Forensic history

Table 4

Eysenck Personality Inventory

Tables 5–7

Substance and alcohol use

Table 8

Table 2 Statistical significant correlation between employment and the crime and between the level of education and the crime: there is also high ratio of perpetrator's risk factors as abusive parent and violence inside the family without significant correlation

		n (%)	
Sex			
Male		35 (94.5)	
Female		2 (5.4)	
Educational level			
Highly educated		19 (51.4)	
Secondary school		14 (37.8)	
Illiterate		4 (10.8)	
Sociodemographic data	(*N*=37)	χ^2 test	
Educational level			
Highly educated	19 (51.45)	0.930	0.050
Secondary school	14 (37.8)		
Illiterate	4 (10.8)		
Employment			
Employee	32 (86.5)	–0.039	0.016
unemployed	5 (13.5)		
	N=37	NPar tests	
	n (%)	χ^2	*P* value
Abusive parent	33 (89.1)	0.273	0.10
Separated parent	15 (40.5)	0.310	0.52
Family size > 5	17 (45.9)	0.411	0.11
Violence inside the family	35 (94.5)	0.586	0.9
Father substance abusers	10 (27)	0.223	0.4

Table 3 29.7% of the sample had history of admission in psychiatric hospital and 40.5% used psychiatric medication

	n (%)
History of previous admission In psychiatric hospital	
Admitted	11 (29.7)
No admission	26 (70.3)
History of taking psychiatric medication	
Taking psychiatric medication	15 (40.5)
Do not take	22 (59.5)

Table 4 21.6% of the sample had history of prior assaults, killing with a sharp instrument was (86.5%) compared to firearms (13.5%): the timing of the crime at night was 86.5% compared with the daytime was 13.5%

	n (%)
Prior assaults	
Prior assaults	8 (21.6)
No prior assaults	29 (78.4)
Method used in killing	
Sharp instrument	32 (86.5)
Firearms	5 (13.5)
Time of crime	
Daytime	5 (13.5)
Night	32 (86.5)

Table 5 The distribution of sample according to Eysenck Personality Inventory and intelligence quotient

	Minimum	Maximum	Mean	SD
Psychoticism	5.00	10.00	7.51	1.677
Neuroticism	15.00	22.00	19.35	1.844
Extroversion	5.00	24.00	16.70	5.511
IQ	76	129	95.1	11.7

IQ, intelligence quotient.

Table 6 The relationship of psychoticism to the crime was a weak correlation coefficient: it also indicates that the relationship between psychosis and the commission of the crime is inverse, the correlation of the neuroticism to the crime was very weak correlation: it also indicates that the relationship was positive, the correlation of the crime with extroversion was a good correlation, it also indicates that the relation between the extroversion and the commission of the crime is inverse

	Total (*N*=37)		One-way ANOVA	
	Mean	SD	*F*	*P* value
Psychoticism	7.51	1.677	–0.243	0.148
Neuroticism	19.35	1.844	0.671	0.72
Extroversion	16.70	5.511	–0.683	0.000

ANOVA, analysis of variance.

Table 7 Diagnosis of mental disorders by Mini International Neuropsychiatric Interview PLUS Questionnaire

	n (%)
Antisocial personality	
Antisocial	12 (32.4)
Non-antisocial	25 (67.6)
Psychiatric disorders	
Mood disorder	12 (32.4)
Schizophrenia	25 (67.6)

Table 8 The correlation of alcoholic beverages consumption with the crime was a weak correlation, also the relationship was positive: the relationship of cannabis abuse with the crime was a weak correlation, with inverse relationship between cannabis abuse and commission of the offense, the relationship of sedatives to the crime was weak correlation. The relationship between sedatives abuse and crime was positive

Substance abuse	High [*n* (%)]	Moderate [*n* (%)]	Low [*n* (%)]	One-way ANOVA	
				F	*P* value
Risk score for alcohol	0	3 (8.1)	34 (91.9)	0.273	0.10
Risk score for cannabis	6 (16.2)	14 (37.8)	7 (46)	–0.010	0.52
Risk score for sedative and sleeping pills	0	11 (29.7)	26 (70.3)	0.411	0.01
Risk score for Opioids	14 (37.8)	8 (21.6)	15 (40.5)	0.586	0.00

ANOVA, analysis of variance.

Discussion

One of the greatest aims of marriage according to the laws of Allaah is so that affection and compassion may prevail between the spouses. Owing to the sanctity of the relationship between a man and a woman, which was described in Islam by the great Charter. , no other crime provokes as much interest as does partner homicide.

Researchers and the public alike seek to understand the underlying mental states that drive a person to take the life of his/her partner (Adegoke and Oladeji, 2008). Violence is increasingly acknowledged as a major health issue, with more attention being focused on domestic violence (Ellsberg and Emmelin, 2014). World Health Organization (2002) has declared that violence research and advancement of violence prevention is a public health priority, in which special attention should be brought to violence against women and children. In line with this, the significance of increased cross-cultural knowledge about size and nature of various types of IPV has been stressed (World Health Organization, 2013). The WHO defines IPV as 'any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship, including acts of physical aggression, sexual coercion, psychological abuse and controlling behaviors' (Larsen, 2016). According to a new report from the Centers for Disease Control and Prevention that takes a close look at the homicides of women, more than 55% of the deaths were related to partner violence, and the vast majority of those were carried out by a male partner (Petrosky *et al*., 2017).

Studies from a range of countries have found that 40–70% of female murder victims were killed by their husband or boyfriend, often in the context of an abusive relationship (Heise and Garcia, 2002). Our interest in studying partner homicide and psychosocial background was not arbitrary; we believed that in a developing country, like Egypt, this crime has a devastating effect on the society, and on the

emotional and social well-being of the whole family. However, women and men are at risk of being murdered by their intimate partners. For women, in particular, research suggests that their greatest risk of homicide is from a current or former intimate partner (Cooper and Smith, 2011). For example, in the USA, a country with high national homicide rates, in 2008, ~45% of female and 5% of male homicides were committed by an intimate partner (Cooper and Smith, 2011). Similarly, in the UK in 2009, 54% of female and 5% of male homicides were perpetrated by an intimate partner (Smith et al., 2014).

Recently, five Ontario women were killed in acts of intimate partner or domestic violence in January 2018, and this number shocked Canada. The deaths of the five women have led to many advocates speaking out on social media, calling for attention to be raised on sex-based violence against women (Abedi, 2018). Comparisons with international studies will shed light on distinct local, cultural, and mental health factors associated with partner homicide in Egypt as opposed to globally shared risk factors. Therefore, promoting a better understanding of the problem from a culturally oriented perspective can help policy makers in the development of a culturally applicable national strategy to control this crime.

Partner violence committed by individuals with mental disorders has increasingly called the attention of physicians, law enforcement officials, and the general public. Various studies conducted in the past decade have shown an association between mental disorders and partner violent behavior (Valença and Marins, 2006). Partners' mental health and drug or alcohol problems, as well as substance misuse problems, have been related to risk for severe or lethal violence (Thomas *et al.*, 2011).

Hence, our study was designed mainly to detect the mental disorders in mental hospital-admitted persons who were convicted of partner homicide, and to describe the psychosocial profile of homicide offenders, aiming to highlight some correlates of partner homicide in our culture.

The current study was done on a sample of partner homicide offenders in a forensic unit in Abbasia Mental Hospital who were referred from the public prosecution to show eligibility or not, as there was a suspicion of legal insanity; therefore, the accused were referred for a psychiatric assessment for a period of 45 days, which could be renewed. Following are the findings related to the study:

Sociodemographic data

Sex

Women are especially at risk of partner homicide. Although men are at higher risk of being killed by an acquaintance or stranger than an intimate, women are more likely to be killed by her spouse than by any other type of assailant (Browne *et al.*, 1999).

Most research studies about IPH are based on studies of men, as they outnumber women as perpetrators. From a total cohort of IPHs in Norwegian National 22-year cohort from 1990 to 2012 ($N=177$), there were differences between male ($N=157$) and female ($N=20$) perpetrators in terms of IPH (Berenbaum *et al.*, 2018).

IPH accounts for ~40–50% of US femicides but a relatively small proportion of male homicides (5.9%) (Campbell *et al.*, 2003). Considering the most update statistics regarding the 358 total homicides that occurred in Virginia in 2014, the majority of the victims were male (73%) (Duer, 2015).

Therefore, from the result of our study, we can draw a conclusion about sex as a risk factor for partner homicide, as we find that the sample was 37 offenders, where only two were females compared with 35 males. So being a male increases the possibility of a partner homicide.

Educational level

IPH tend to come from socially disadvantaged groups. Some studies have found a relationship between low academic achievements and predicted physical abuse of partners and therefore partner homicide. Sharps *et al.* (2003) found Black-American males who murdered or attempted to murder their partners more frequently reported low level of education than did others who carried out these same acts. This study is not in harmony with international studies, as these international studies consider low educational level as a predictor of socioeconomic status which affects other variables such as living conditions. However, the present study indicated that educational level in mentally disordered homicide offenders has significant relation with the crime, as those highly educated patients are partially insighted and can make a good plan for their crime and react to their delusion.

Employment status

Unemployment rates among IPH perpetrators vary widely across samples, with estimates ranging from

13 to 58%. Jacquelyn *et al.* (2003) found that unemployment was the most important demographic risk factor for acts of IPH. In fact, abuser's lack of employment was the only demographic risk factor that significantly predicted homicide risks after we controlled for a comprehensive list of more proximate risk factors, increasing risks four-fold relative to the case of employed abusers.

As seen from our results, most were employed at the time of crime; however, we cannot say that the homicides in Egypt are totally different from the rest of the world and are not related to unemployment rates. Nonetheless, we can argue that the relation between homicide and the labor market is complex, and there are other factors that are associated with unemployment, rather than that unemployment itself explains most of the links between partner homicide and unemployment. Therefore, in countries like Egypt, a multitude of these other factors interlace, especially income rates and hidden unemployment, and also seasonal or temporary work, which is not considered as a fixed job. Therefore, in the statistics of the studied sample, we found that the correlation of partner homicide crime and employment had a negative relation, which means that if employment increases, the crime will decrease. This is concomitant with most other studies.

Family relations

Research conducted in both the UK and USA has suggested that adverse childhood experiences may lead to future criminality and antisocial behavior (Dallair, 2007). Such risk factors for future offences included abusive parent, separated parent, big family size, violence inside the family, and father substance abusers. This suggests that familial circumstances and relationships in childhood may have a strong influence on an individual's future and their behavior (Williams *et al.*, 2012).

Overall, 18% of IPH offenders stated that they had a family member with an alcohol problem, and 14% with a drug problem. One in 10 of the 181 imprisoned fathers in this study reported being physically abused by their fathers, with more than two-thirds witnessing domestic violence at some point during childhood (Boswell and Wedge, 2002). Overall, 34% of the offenders stated that they had lived with one natural parent all or most of the time (Williams *et al.*, 2012). As all the offenders in the studied sample had such risk factors with different statistical ratio, this may be owing to the small sample size and our culture, which considers violence with children as a kind of education, and beating the wife is normal and usual within the family. Moreover, most of the offenders deny their family history or report it wrongly. Therefore, these may be the reasons for the lack of significant results related to these factors.

Psychometric and psychiatric evaluation

Intelligence quotient

The mean intelligence quotient (IQ) scores in the studied sample were 95.1. Moreover, none of the sample met DSM-VI diagnostic criteria for mental retardation. Along with this,

Deiker (1973) found that Wechsler adult intelligence scale IQ was generally average in 190 prisoners convicted for murder. In addition, Pegan and Smith (1979) found that 79% were in the normal range of intelligence. There was a negative correlation between the crime and IQ level, which may reflect poor judgment, inability to know right from wrong, or brain pathology, perhaps indicating minimal brain dysfunction. This is supported by a study of the relationship between US county-level IQ and US county-level crime rates, which found that higher average IQs were associated with lower levels of crime (Beaver, 2013).

Eysenck Personality Inventory

Personality and crime have been linked in two general ways: first, in 'personality trait psychology' (Akers and Sellers, 2009), where certain traits within a structured model of personality may be linked to crime behavior, such as the Psychoticism, Extraversion, and Neuroticism model of Eysenck. The second way that personality theorists have linked personality to crime is through 'personality-type psychology' (Akers and Sellers, 2009) or by asserting that certain deviant, abnormal individuals possess a criminal personality, labeled psychopathic, sociopathic, or antisocial. The term antisocial, not psychopath or sociopath, is now used by the American Psychological Association in the DSM-IV-TR (2000). This disorder manifests itself as a persistent disregard for and violation of the rights of others, beginning at an early age and persisting into adulthood. The DSM-IV-TR (2000) outlines the ASPD as a broader clinical disorder than psychopathy, a diagnosis that could easily be applied to many who engage in criminal behavior. Eysenck hypothesized specific associations between the Psychoticism, Extraversion, and Neuroticism model and crime, proposing that the typical criminal would possess high levels of all three of his proposed personality dimensions (Eysenck, 1997). Our result was not far from Eysenck model, as we found that there is a correlation between PNE dimensions and partner homicide.

Most of the offenders have high levels of neuroticism with a positive relation with crime, which means that increased level of neuroticism leads to increased level of crime. These persons are unable to inhibit or control their emotional reactions.

On the contrary, we found a negative relation between partner homicide and both psychoticism and extroversion. This result reflects that the psychoticism definition in Eysenck model means that the person characterized by nonconformity, inconsideration, recklessness, hostility, and interpersonal coldness who has no motivation to be an offender, and by logic, high level of extroversion has little opportunity to commit a crime.

Psychiatric diagnosis

Personality disorders

Population-based research has shown a 7% prevalence rate for personality disorder (PD) across IPH perpetrators in England and Wales.

Belfrage and Rying (2004) found very similar rates in their sample of 164 Swedish forensic psychiatric patients. After unspecified PD, narcissistic, antisocial, and borderline personality disorder diagnoses were most common. Only ~5% of the sample of IPH perpetrators met diagnostic criteria for psychopathy, and the average Psychopathy Checklist: Screening Version score in this sample was 11.27, which is lower than in most criminal samples. Overall, 20% of the pretrial sample of 213 domestic homicide perpetrators in Missouri studied by Daniel and Holcomb (1995) had a specific diagnosis of ASPD. A majority (83%) of the sample of IPH-only perpetrators in Albuquerque were reported by Rosenbaum (1990) to have a PD, generally ASPD.

Hiscoke *et al.* (2003) reported that individuals diagnosed with PDs were more inclined to perpetrate severe violent crimes, such as partner homicide. The link between offending and ASPD is unsurprising, as this particular type of PD is thought to account for most of the relationship between offending and PDs (Davison and Janca, 2012). Overall, 32.4% of the current sample had ASPD. The contradiction of the results with high percentage with other results may be explained on the basis of small sample size and different tool used. However, there was a positive statistical correlation between crime and ASPD, which concluded that ASPD was highly predictive of crime behavior.

Psychiatric disorders

The association between crime and mental disorders has been the focus of research for many decades (Elbogen and Johnson, 2009). Partner violence committed by individuals with mental disorders has increasingly called the attention of physicians, law enforcement officials, and the general public. Various studies conducted in the past decade have shown an association between mental disorders and partner violent behavior (Valença and Marins, 2006). One of the principal approaches to studying this relationship is the evaluation of homicidal individuals, as murder is considered the most serious manifestation of violent tendencies (Mullen *et al.*, 2000). The result in the studied sample recognized higher percentage of schizophrenia (67.6%) than mood disorders (32.4%).

This was in harmony with Hodgins (2007), who evaluated a sample of patients with severe affective disorders and schizophrenia from one forensic hospital. The study sample consisted of 104 male patients, 30 of whom had been diagnosed with severe affective disorders (18 with bipolar disorder and 12 with major depression), and 74 of whom had been diagnosed with schizophrenia.

These, often due to psychotic symptoms, such as delusions of persecution and auditory hallucinations, have been shown to be more strongly associated with violent behavior.

In our statistics, there are no significant functional differences between schizophrenia and mood disorders, as researchers must consider that the association between severe affective disorders and homicide was underestimated, because murderers who subsequently commit suicide were not included, and many such murderers might have presented severe affective disorders. Moreover, there are mood disorders with psychotic features, and some manic features will be included under the umbrella term of 'psychosis' and therefore do not differentiated from those with schizophrenia.

Substance and alcohol use

The misuse of alcohol and illegal substances is highly correlated with violent and nonviolent offending. Substance misuse is a common comorbidity to other mental disorders and has been shown to exacerbate the risk of offending in these groups (Elbogen and Johnson, 2009).

In 2013, alcohol and drug abuse were the third and fourth most common risk factors present in IPR

homicide after history of violence and criminal offenses (Duer, 2015). Substance use has also been shown to be a risk marker, and some researchers have suggested that intoxication lowers inhibitions and increases impulsivity, thus leading to a higher propensity for violence of all kinds (not just IPV); however, research has shown that substance use is correlational and not causal (Hamburger and Phelan, 2004).

In our sample, we found that all offenders are tobacco smokers, which is accepted in psychiatric patient, to relieve their psychiatric symptoms. Moreover, we found that the most common substance in our culture is cannabis, and then opioid and sedative, and the least one was alcoholic beverages. So we can draw a conclusion that this difference may be culturally determined. All these substances had a positive correlation with the crime, which means that increased substance misuse will increase the risk of the crime. This result is in harmony with other researchers who claimed that alcohol and other drugs have long been associated with violent crime and intimate homicide (Langan and Dawson, 1995).

The study by Sharps *et al*. (2015) on the patterns of alcohol and drug use in the murder or attempted murder of women by their intimate partners showed a strong and direct relationship between substance use and such violence. In the studied sample, we observed a negative relation between crime and cannabis use; this may be owing to indifference and apathy symptoms that happen from cannabis abuse.

Past psychiatric history

It included previous admission in a psychiatric hospital or taking psychiatric medication.

In a research study of 387 domestic violence, Sato-DiLorenzo and Sharps (2007) reported that past history of partner mental health symptoms was significantly associated with high risk for lethal violence. Thus, poor mental health may increase the risk for lethality among partner. Fazel and Grann (2004) found that individuals, who had, at some point, been diagnosed with a mental disorder, had committed 50% of the most severe violent offences, namely, manslaughter and homicide. The study was based on 324.000 registered violent offences in Sweden between the years 1988 and 2000. More recently, in an American study with almost 7000 participants, Stevens (2013), reported that 44% of female and 22% of male jail inmates had a psychiatric disorder. As all offenders in our sample were diagnosed as having psychiatric disorders, we found that 29.7% had past history of previous admission in a psychiatric hospital and 40.5% were taking psychiatric medication.

This is not far from the findings of Shaw and Dubois (1995), as they reported that 30–40% of the offenders of partner homicide were in contact with psychiatric services for admission or to take psychiatric medicine, as seen in the results from psychiatric court report.

Forensic history

Prior assaults

Because Supplementary Homicide Reports do not contain information about the prior interactions of specific couples, no national estimates are available on the number of partner homicides that involve a history of physical assault or threat before the lethal incident (Browne, 1997).

However, more detailed studies of homicides indicate that a significant proportion of partner homicides by women occur in response to an assault, a history of assault, or threats (Rosenfeld, 1997). Both clinical and research studies document a history of physical assaults by men who eventually kill their female intimates (Dutton and Kerry, 1999). The escalation or a high frequency of violence may be additional risk markers for partner homicide (Straus, 1996). Therefore, previous offending behavior seems to be a determinant of homicide. However in our sample, pervious offending rate was 21.6%, which does not play a major role. We think that the contradictory results may be explained by key factors distinguishing psychotic from nonpsychotic partner homicide, including a preoffence criminal history, as psychotic patients are less likely to have a prior history of criminality.

Method used in killing

Although the majority of those murdered by an intimate are killed by a firearm as claimed by Greenfeld *et al*. (1998), our sample showed that sharp instruments were the most common weapon used by the offenders. However, this was in contrast with the National Security Statistics, which describes that of the total use of weapons in IPH, firearms were the most common, yet the researchers hypothesize that this is only a reflection of the increased use of firearms in honor killing, as firearm assaults in the family are 12 times more likely to result in death than nonfirearm assaults (Saltzman, 1992). The Centers for Disease Control and Prevention (CDC, 2017) report analyzed the method of homicide, and more than half involved firearms and 20% involved some sort of blade. Our findings were different from the international finding,

as in other countries, the firearm is reachable and easily available than in Egypt, and is not expensive as in our community. Moreover, if we speak about the role of media, we will find that since about 30 years in Ria and Sakina play, when one actor named Ahmed Bedar, said that: his father killed his mother by sharp instruments due to a minor problem. Our culture also accept this issue especially in honor killing when the defendant killed his wife, who saw her in adultery, and boasted of her killing. So all men in the court got excited and clapped their hands, and we found the judge ruled the acquittal of a defendant who committed the murder.

Time of crime

We found higher rates of partner homicide at night and lower rates in the daytime, which agrees with most of the researches from western countries where homicide peaks at night when people engage in social drinking (Hamburger and Phelan, 2004). Hence, we speculate that time of the crime occurrence is a culturally entrained that related to the pattern of social activities within the society. As most of our sample were employee, so they do not meet their wives all day, except at night, and in Egypt, the night time is the most frequent time the family meets. Moreover, Greenfeld *et al*. (1998) found that mentally disordered homicide offenders tend to kill more at night whereas those with PD and no mental illness tend to kill in the morning. This was supported by our studies, as all the sample had psychiatric disorders.

There are no conflicts of interest

Nil.

Conflicts of interest

None declared.

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