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Human vulnerability in motorcycle traffic

Vulnerabilidade humana no contexto do trânsito motociclístico

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Abstract

The essential aspect of vulnerability as an ethic principle of the Universal Declaration on Bioethics and Human Rights is to formulate a moral action obligation facing the situations that endanger certain society groups. In this sense, this study aims to promote a reflection, starting from the principle of respect for human vulnerability, using as target audience the motorcyclists and their experience using the motorcycle. It is a study with qualitative approach, using quali-quantitative methodology for the analysis of participants' interviews. From the motorcyclists' experience with the use of motorcycle it was possible to present some notes that meet the need for respect for human vulnerability and the use of motorcycle, namely: maximization of human intrinsic vulnerability; social vulnerability; and State's social responsibility in the face of the use of motorcycle. By considering the respect for human vulnerability and the use of motorcycle, it is necessary to correlate aspects that involve social responsibility with situations of human susceptibility to harm. Therefore, it is essential the implementation of intervention policies that embrace economic, cultural and political dimensions, through intersectionality, in order to effectively reach all actors involved in the dynamics of motorcycle traffic safety: State, policing authorities, vehicle manufacturers, drivers, pedestrian, and cyclists.

Keywords: Human Vulnerability; Motorcycle; Traffic.

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Resumo

O aspecto fundamental da vulnerabilidade enquanto princípio ético da Declaração Universal sobre Bioética e Direitos Humanos é o de formular uma obrigação de ação moral diante das situações que fragilizam determinados grupos da sociedade. Nesse sentido, este estudo objetiva promover uma reflexão, a partir do princípio do respeito pela vulnerabilidade humana, utilizando como público-alvo motociclistas e sua experiência com o uso da moto. Trata-se de estudo com abordagem qualitativa, utilizando metodologia quantiquantitativa para análise das entrevistas dos participantes. A partir da experiência dos motociclistas com a utilização da motocicleta foi possível apresentar alguns apontamentos que vão ao encontro da necessidade de respeito pela vulnerabilidade humana, a saber: potencialização da vulnerabilidade intrínseca ao ser humano; vulnerabilidade social; e responsabilidade social do Estado diante da utilização da motocicleta. Ao considerar o respeito pela vulnerabilidade humana e a utilização da motocicleta, torna-se necessário correlacionar aspectos que envolvam a responsabilidade social com situações de suscetibilidade humana ao agravo. Assim, torna-se fundamental a implementação de políticas de intervenção que abarquem as dimensões econômica, cultural e política, por meio da intersectorialidade, para que se consiga alcançar efetivamente todos os atores envolvidos na dinâmica da segurança do trânsito motociclístico: Estado, autoridades de fiscalização, fabricantes de veículos, condutores, pedestres e ciclistas.

Palavras-chave: Vulnerabilidade Humana; Motocicleta; Trânsito.

Introduction

From the 1980s on, there was an increase in the mortality rate by external causes, which have become the second cause of death in Brazil, being traffic accidents and homicide the main responsible for such increase. In relation to traffic accidents, it is highlighted the growth in the number of motorcycle accidents, because it is an agile, economic and lower cost vehicle (Santos et al., 2008).

Information from the Brazilian National Traffic Department (Denatran) and from the Information System on Mortality from the Brazilian Ministry of Health confirm this increase, as Brazil, in 2015, registered a fleet of 24,301,681 motorcycles, 27.54% of the total vehicle fleet, with emphasis on the Southeast region, which showed the highest number, followed by the Northeast region¹. According to the Information System, Brazil registered 5,067 motorcyclists' deaths in 2004, a number 143.1% lower than the one registered 10 years later, having 12,318 deaths in 2014.²

The increase in the probability of involvement in accidents contributes to the motorcyclists' vulnerability, and the mortality risk can be twenty times higher when compared with the automobile drivers (Vasconcellos, 2013). The trauma resulting from these accidents, generally polytrauma, result on surgical beds and intensive care units being occupied for long periods, making it hard to free the beds for other admissions. Thus, the resource destined to the coverage of the spending with these victims' hospitalization reduce the possibility of expenses with many pathologies (Zerbini et al., 2009).

In accidents in which grave spinal cord and brain injuries predominate, almost all due to traumatic brain injuries, the individuals involved are mainly young, male, with low socio-economic conditions, previous trauma history, ingestion of alcoholic beverages, and disrespect to traffic laws (Silva, 2013).

Therefore, such reality affects mainly youngsters, having high morbimortality - death and

1 BRASIL. Departamento Nacional de Trânsito. *Frota de Veículos: 2015*. 2015. Available from: <<http://www.denatran.gov.br/estatistica/257-frota-2015>>. Access on: 21 jun. 2017.

2 BRASIL. Ministério da Saúde. Sistema de Informações sobre Mortalidade. *Informações de saúde, óbitos por causas externas 2014*. 2014. Available from: <<http://bit.ly/1MN954C>>. Access on: 12 Jan. 2016.

disabling injury - and resulting on a heavy economic burden for the Brazilian National Health System (SUS) and for Social Security, besides the loss of a significant share of the population that are potentially income producers in the country (Vasconcellos, 2008). It is a serious public health problem in Brazil, fairly neglected, and that endangers certain social groups (Silva, 2013).

The relevance of studying this theme of accidents involving motorcyclists is justified by these accidents' higher risks when compared to other means of transportation, by the significant predominance of young adults involved and by the vulnerable socio-economic class in which most of the accidents' victims are concentrated, besides the social harms created for families and for the State (Moraes; Massarollo, 2009; Silva, 2013; Vasconcellos, 2008).

From that, the current human vulnerability situation in which is the theme of motorcycle accidents in the country, it is identified the interest and the need for studies and reflection on this theme, which is inserted in the thinking rationale by Muñoz Sánchez and Bertolozzi (2007), by pointing out the vulnerability as a set that comprises collective aspects that lead to the susceptibility of health harms.

The respect for human vulnerability has gained prominence in the bioethical discussions after the validation of the Universal Declaration on Bioethics and Human Rights, which includes principles that widen the subject to the scope of social interest issues. In this sense, the article 8 of the declaration

recommends the protection of individuals or groups in special vulnerability state (Unesco, 2005, 2013). The essential aspect of vulnerability as an ethical principle would be to formulate a moral action obligation (Neves, 2006) in face of the situations that endanger certain society groups. In this context, this study aims to promote a reflection from the principle of respect for human vulnerability, using as target audience the motorcyclists and their experience using the motorcycle.

Methodology

It is a qualitative approach study, that uses qualitative methodology to analyze the interviews with motorcycle users. The sample was composed by motorcyclists from the Ceilândia satellite town, close to Brasília, in the Federal District (DF). Thirty motorcyclists were interviewed. As inclusion criterion, it was used individuals older than 18 years, owners of motorcycles. The users of tricycles and drivers who denied signing the Informed Consent Form were excluded.

The research was performed through the application of a semi-structured questionnaire containing ten objective and subjective questions, besides performing the participants' socio-demographic characterization. The interviews were written down and the approach to the research participant happened randomly, between March and April of 2015 in the main public routes of Ceilândia, chosen due to its high movement of people.

Chart 1 – Socio-demographic profile of research participants

Sex	Male		Female
	90%		10%
Age group	18-30 years	31-40 years	Older than 40 years
	63%	23%	14%
Profession	Motorcycle courier	Drivers	Other
	20%	11%	69%
Average income	1-2 minimum wage	2-5 minimum wage	No payment
	66%	30%	4%
Motorcycle type	125cc	150cc	Other
	43%	23%	34%
State of birth	DF	BA	Other
	56%	16%	28%
Education	High School	High education	Other
	63%	20%	17%

It was performed the analysis of objective questions related to the participants' profile and, later, the data were categorized to subsidize the reflection based on the principle of respect for human vulnerability. This research was approved by the Committee of Research Ethics from the Faculdade de Saúde da Universidade de Brasília. All participants signed the Informed Consent Form.

Outcomes

Using the close-ended questions, the participants' socio-demographic profile was traced, according to what is displayed in Chart 1. It was determined that 90% of the motorcyclists were men and 10% were women. Most of them, 63%, aged from 18 to 30 years old; 23% from 30 to 40 years old and 14% were older than 40 years old.

Concerning the profession, 20% were motorcycle courier, 11% were drivers and 69% were classified as "others," identifying themselves as: mototaxi driver, microentrepreneur, unemployed, attendant, clerk, butcher, trader, construction worker, plasterer, electrician, cook, production assistant, cleaning assistant, home attendant and telemarketers.

In relation to the participants' average income, described based on the current minimum wage (R\$ 788.00), 66% declared that they received from 1 to 2 minimum wages; 30% from 2 to 5 minimum wages and 4% reported not receiving any remuneration. Concerning the motorcycle profile, mainly characterized by the cylinder capacity (cc), 43% of the interviewed owned motorcycles that had 125cc; 23% owned motorcycles with 150cc; and 34% of the interviewed identified themselves as "others," such as 300cc, 400cc and 100cc. Most of the participants drove small motorcycles.

About the education level, 63% declared to have completed high school; 20%, high education and 17% were classified as "others," for example, having completed only elementary or having no level of schooling. Concerning the state of birth, 56% were born in the DF, 16% in Bahia and 28% in other States, as Piauí, Rio Grande do Norte and Ceará. All current lived in the Ceilândia town.

When questioned the "motive of choosing the motorcycle as a means of transportation," 46% said

they used the motorcycle because of its economy; 23% for the emotion/enjoyment; 16% said it was because of faster speed; and 15% for other reasons, such as: influence of the family, friends, work, accessibility and availability.

Concerning the "taking any course, training or lecture on the conscious use of motorcycles" question, 70% of the participants answered they had never been to any course, while the other 30% reported they took a course for motorcycle couriers, declaring to have attended lectures in the workplace, quarter, internet or television.

However, when questioned about the "safety equipment used during motorcycle driving," all participants confirmed to use helmet, but did not mention the use of other equipment as boots, night lights, and gloves, among others, which are equally important in case of an accident.

About the "respect for the traffic laws," 83% answered that they follow all laws and 17% declared not to follow it, because they understand the law is too subjective or excessive.

According to the parameter "consideration on the main causes of motorcycle accidents," 40% believe it to be recklessness; 15%, general lack of attention of the motorcycle and car drivers; 11%, disrespect for traffic laws; and 34% referred to others, as the lack of qualification and license for driving, the risk of riding in the corridor between cars, lack of signaling, inadequate routes, driving under the influence of alcohol and illegal drugs, driver's irresponsibility, lack of motorcycle maintenance and hurry.

When answering the question related to "knowledge on statistics about the main causes of motorcycle accidents," 17% of the drivers interviewed reported not knowing it, while 83% answered correctly: driving under the influence of alcohol and drugs, lack of license, drivers' recklessness and poor routes' conditions.

Concerning the "accidents they suffered in the last six months," 35% answered that they had accidents during this period and 65% said they did not. While answering about the severity of the accident, 15% had complications that made it necessary for them to be hospitalized for more than 24 hours.

About the "support or help means the victims received after the severe accidents," 15% answered

they had help from the Mobile First-Aid Service (Samu) or firefighters, from the National Institute of Social Security (INSS) and from the Insurance of Personal Harm Caused by Automobile Land Vehicles (Dpvat); however, 83% said they did not receive the financial aid, but affirmed to have received the support from relatives, firefighters, Samu, besides the hospitalization by SUS.

When approaching the question “donating organs and human tissues,” 87% reported not being an organs donor, while 13% declared their option by donating. Among the donors, 43% reported that the family does not know their intention of being a donor. Another question oriented towards the theme, destined to establish the knowledge “on the relation between motorcycle accidents and organs donation,” allowed us to infer that 70% did not know the strong relation, while 30% knew it, but mentioned being afraid of organs trafficking.

In the next section, the outcomes will be discussed based on themes that are directly related to the principle of respect for human vulnerability and the use of motorcycle, namely: maximization of the vulnerability intrinsic to human beings; social vulnerability; and social responsibility in the face of motorcycle traffic.

Discussion

The concept of vulnerability always permeates the etymologic core the correlates it with the conditions of exposure to injuries, something that is susceptible to physical or emotional damage (Cunha; Garrafa, 2016). Therefore, human vulnerability should be observed from the social dimension, since it points out the human frailty resulting from economic inequality and health iniquity (Corgozinho; Oliveira, 2016).

In the study on the theme of human frailty promoted by harm and violence situations, exemplified by the case of the motorcycle traffic, it is possible to suggest two levels of vulnerability analysis, being the first oriented towards the intrinsic human condition and the biological frailty - which allow illness and the end of life itself - and the second being inherent to the lack of minimum conditions for human life dignity (Corgozinho; Oliveira, 2016; Correa, 2011; Kottow, 2011).

Potentiation of intrinsic vulnerability

As an anthropological resource, vulnerability strongly suggests the need for developing normative arguments of support to the protection of life-essential attributes (Correa, 2011; Kottow, 2004). In the international bioethics scope, vulnerability gains strength as an ethical principle through the Universal Declaration on Bioethics and Human Rights, by affirming that human vulnerability should be taken into account, which corresponds to recognizing it as an indelible human condition trait, intrinsic to its irreducible finitude and frailty (Unesco, 2005).

The term “vulnerability” refers to the protection owed to more fragile society citizens, and it appears in the public health and epidemiology areas referring to groups vulnerable to certain harm or pathologies (Neves, 2006; Schramm et al., 2005). It is a qualification attributed to people or populations that results from particular or occasional characteristics (Neves, 2006).

In this study, it is possible to deduce that there is a series of structures that compete for the increase of current frailty in motorcycle traffic. The motorcycle driver profile verified was in line with other studies performed in Brazil, in which it was observed a bigger rate of young, male and low purchase power motorcyclists. Additionally, there is an agreement in relation to the expressive predominance of young men, associated to low schooling levels in the traffic accidents statistics (Brasil, 2008; Silva, 2013; Vieira et al., 2011).

The socio-cultural patterns related to gender issues are perpetuated in society and determine the vulnerability among male young adults belonging to the productive age group. According to the Brazilian Ministry of Health, the processes involved the socialization contribute to justify the male sex exposition to violence and harm in the public space, usually linked to the abusive use of alcohol and/or illegal drugs (Brasil, 2008). Thus, it is understood that there is a chauvinist social pressure that presses the male sex into risk situations (Andrade et al., 2009).

It was demonstrated that a share of the motorcyclists has low schooling level, including

the presence of illiteracy. The educational level of a population has a direct relation with its health condition (Corgozinho; Oliveira, 2016). Therefore, the socio-cultural level can decisively affect the capacity on information interpretation, as well as the recognition of risk situations and of the causes of traffic accidents (Silva, 2013; Vasconcellos, 2008).

In Brazil, the illiteracy level is still high, a factor that makes impossible the acquisition of a driver's license and, as a result, it increases the risk of accidents for the driver that attempts to cheat it (Andrade et al., 2009), negatively influencing the traffic flow and safety. This study did not verify which drivers had licenses, but, upon considering the interviewed drivers' profile, it is suggested that it may be similar to a research carried out in Ceará, in which was demonstrated that a great share of the victims of motorcycle traffic accidents did not have license (Andrade et al., 2009). It is highlighted that the lack of qualification for vehicle driving - knowledge on defensive driving, main accidents causes, safety equipment and specific regulation - results on higher risk, caused by the inability of evaluate and avoid dangerous situations.

It is emphasized the significant deficit of information on the main causes of accidents, besides the lack of knowledge on the strong relation between motorcycle accidents and the donation of organs and tissues. Most of the motorcyclists affirmed not to be a donor, and among the donors, the relatives did not know they interest in donating. This answer pattern reveals the reflect of the lack of awareness about the process of organs donation and it refers to the context of human vulnerability.

The process of organs donation for transplant is considered complex, since it begins with the discovery of a potential donor in a notifying hospital and it ends with the transplant, in case the family agrees with the donation (Fusco et al., 2009). According to the study by Moraes and Massarollo (2009), family refusal - beliefs, values, awareness, brain death notion, organs trafficking and inadequacies in the donation and transplant process - contributes to the number of donators being insufficient to meet the growing demand of

recipients in the wait list and, thus, it is pointed out as one of the responsible factors for the lack of organs and tissues for transplanted. However, in a recent Spanish study it was observed a significant percentage of 70% of organs donors among the patients with the diagnosis of brain death, which would be related to the consequence of the effective participation of intensive care specialists during the whole organ donation process (Escudero et al., 2015).

Another important point, concerning to the fact that motorcyclists do not know the existing association between severe motorcycle accidents and the potential for organs donation, is the reduction of their perception about their susceptibility in traffic, which can influence their justification for risk attitudes in traffic. Concerning the risk behavior, psychological theory considers that justifications can be attributed in order to reduce internal discomfort, especially when it is perceived that the behavior can be considered irrational or immoral. The central idea is that people have the ability of making up moral ideologies in order to justify their risk behaviors, internally lessening self-disapproval (Neto; Iglesias; Günther, 2012). It is advocated through raising citizens' awareness on the theme of bioethics of organs and human tissues transplant, with the objective of empowering them, in order to reduce vulnerability in decision making.

The mentioned considerations refer to the need for differentiating the concepts of susceptibility and vulnerability, defining as "susceptible" the individual that appears in a disadvantage situation that predisposes him to harm or human suffering (Kottow, 2003, 2011). In this sense, it is highlighted that the responsibility for traffic accidents should not be attributed exclusively to the driver (Silva, 2003), since the vulnerability inherent to human beings is potentialized by cultural, economic and social factors prevailing in motorcycle practice (Brasil, 2008; Vieira, 2011; Zerbini et al., 2009). These variables can be directly related to social vulnerability, which will be following discussed, taken in this study as a condition that fragilizes the motorcyclist and makes him susceptible to traffic harms.

Social vulnerability

In public health, the issue of social vulnerability outweighs the individualizing character of the risk concept and it appears as a collective set that leads to the susceptibility to health harm (Muñoz Sánchez; Bertolozzi, 2007). The harmful effects related to the socio-economic poverty that characterizes the violence situations are enhanced by the inequality related to sex, race, ethnicity, geographical region and intergroups, such as the motorcyclists (Braveman, 2014; Garrafa, 2012). The situations of economic inequality and social vulnerability are closely related, referring to the context of human frailty (Corgozinho; Oliveira, 2016).

Social vulnerability interferes in the individuals' self-determination capacity and it contributes significantly to the exposure to a range of risks (Braveman, 2014; Garrafa, 2005; Unesco, 2013). Such theme is related to this research in the context of the situations of possible frailty in which a large share of the motorcycle users are, namely: low income and schooling; use of motorcycles as a means of work and very economic transportation; and use of low cylinder capacity motorcycles. Generally, low cylinder capacity vehicles are more dangerous because they do not come with safety equipment from the factory, such as the traction control that reduces drifts and slippage, ABS brakes, better lighting system, and more visibility in traffic.

Vasconcellos (2008) reports that most of motorcycle buyers, about 80%, pays from it by monthly fees or are part of consortium groups, with eases the motorcycle acquisition by the lower purchase power classes. In agreement with this study, it was also observed that the use of motorcycle as a transportation and work tool is growing, given its low acquisition and maintenance cost, which results on the increase in the number of motorcycles in use in the streets and, consequently, on bigger vulnerability and exposure to the risk of accidents (Andrade et al., 2009). Until the 1980s, in Brazil, motorcycles were still seen as leisure vehicles, but its low cost and agility in traffic jams made it a transportation and work vehicle, especially after the 1990s (Amorim et al., 2012).

Generally, motorcycle couriers and mototaxi drivers are the ones most susceptible to suffering accidents due to their higher exposure in public routes, due to the stimulus on which these activities were structured (Amorim et al., 2012; Vasconcellos, 2008). In this study, the participation of mototaxi drivers was not significant, but it is known that part of the motorcycles has been used as mototaxis legally or illegally, finding a fertile ground in a deregulation environment. Another significant part of the motorcyclists comprises the small goods delivery services, especially in big cities, which have higher degrees of traffic jams and clients that look for quick delivery of goods, therefore offering new job opportunities for young people (Vasconcellos, 2008).

These occupations absorb a share of the Brazilian population that did not have access to school and professional formation, and, for that reason, have low salaries, resulting on an attractive alternative of formal work - hired or outsourced - or even informal work. In a study by Amorim et al. (2012), it was observed that, in a 300 participants sample, most of the professionals who used motorcycles as an income means did not have other payed activities and did not contribute for Social Security.

There is an actual "army" of young people, mostly men, that crosses the city at high speed to get quickly to their destinations (Vasconcellos, 2008). Besides that, the motorcyclists are seen by the common sense in a positive light, when talking about their work, but are seen negatively in their traffic behavior, as if both existed separately: everybody hates the motorcycle couriers, except when they need one (Diniz et al., 2006).

It is observed that some individuals are more vulnerable than others and, thus, are susceptible to harm (Cunha; Garrafa, 2016). The social conditions or situations are expressed in a direct relation with their life social conditions, such as: work condition; gender; social class and schooling, among others (Almeida, 2010). In unfavorable situations, such circumstances provide vulnerability of human being integrity, making him susceptible to risk (Kottow, 2003, 2004, 2011).

These different ways of handling human vulnerability allow us to apply specific ethical measures

oriented towards actively reducing intrinsic vulnerability with double care (Almeida, 2010).

Social responsibility

In the 1960s, following the global trend, the investment of Japanese fabrics on the marketing of motorcycles in Brazilian market begun. As a consequence, in the 1990s, the use of motorcycle grew due to the improvement of national production and economic stimulus by the government, with the immediate answer on the rise of accidents (Vasconcellos, 2013; Zerbini et al., 2009).

The motorcyclists represent half of the 153,000 victims hospitalized in the public network.³ Data from this study show a significant number of motorcyclists that had accidents in the last six months and were assisted by Samu, were admitted to hospitals and ambulatory, as well as used resource from Dpvat and INSS.

A study performed by the Institute of Applied Economic Research (IPEA) that treats about the cost of accidents informs that 71% of motorcycle accidents involved injured people who need hospital care, while in other means of transportation this percentage decreases to 7%.³ In a way, every Brazilian bears the consequences of traffic accidents, even though obviously the main burden of the occurrences falls upon the victims and their families.

While in more economically developed societies the issue of accidents gained the status of a public health issue and it deserves the wide attention of governments, in the developing countries the theme is even treated as fatality or a consequence of development (Silva, 2013; Vasconcellos, 2013). In European countries, for example, the decline in traumatic brain injury as the cause of brain death can be explained by the decrease in traffic accidents (Escudero et al., 2015).

This idea was made clear in this research, by presenting the deficit of awareness measures expressed by the speeches on the lack of capacitation courses that approach subjects as the responsible motorcycle use and regulation, prevention of

frequent causes of accidents, use of protection equipment, and donation of organs and human tissues. It is highlighted, moreover, that in countries with developed economy, high amounts are invested in the control of traffic accidents, while in the developing countries this does not occur in the same proportion (Ganne, 2010; Silva, 2013; Vasconcellos, 2013).

Moreover, it is possible to accredit an irresponsible posture of the public authorities in the quick and unrestrained acceptance of motorcycles, be it by the industrialization or by the understanding of motorization of society as progress. Concurrently, the increase in motorcycle use was associated, demagogically, to the liberation of low purchase power citizens, to the guarantee that these vulnerable social groups would finally have access to motor vehicles (Vasconcellos, 2008).

Hence, it was introduced and evolved a methodology of accident monitoring and analysis characterized by the individual driver's accountability (Silva, 2013). Generally, the motorcyclists' behavior, who are mostly professionals, is due to the high demand and limits imposed on the action and management of the risks they are subjected to, determined by social relationships that must be analyzed and transformed (Diniz et al., 2006).

The lack of recognition of the harm to certain vulnerable groups is related to the neglect by inaction or any compromise with harm repair (Kottow, 2011). Nowadays, the concept of social responsibility is widened for individuals, communities, and public institutions and it is understood as a moral obligation. However, when the duties resulting from the fundamental right are considered, responsibility is widened and oriented to public and private sector, which, from its legitimate sovereignty, the State should be able to protect its citizens from social threats (Unesco, 2010).

The State's coercion power in relation to traffic is sculpted in the Brazilian Traffic Code, and it is the authorities' responsibility to promote population awareness and inspection concerning the dangers of risk behavior in motorcycle driving (Andrade et

³ IPEA - INSTITUTO DE PESQUISA ECONÔMICA APLICADA. *Pesquisa sobre custos de acidentes de trânsito em rodovias brasileiras 2009*. Available from: <<http://www.ipea.gov.br>>. Access on: 20 Jan. 2016.

al., 2009). Contextualizing, we quote the observed change in the profile of organs and tissues donors, in which the main causes of brain death are now due to hemorrhagic cerebrovascular accidents, with decrease of traumatic brain injury. The profile change can be related to the decrease in the traffic accidents, associated to the Law 11,705 of 19 June, 2008 - called "Lei Seca" -, despite Brazil still being the fifth country with higher number of deaths in traffic accidents (Fusco et al., 2009).

Motorcycle traffic involves a complexity of social, economic and cultural factors that determine its insecurity. Against that, there is a strong and untouched subjectivity that affects the analysis of the traffic accidents theme (Silva, 2003). The recognition of each citizen's rights arising from the installed susceptibility finds ethical support by considering that the State has the compromise to protect collectivity in face of any situation that potentiates the risk to harm, thus needing to be modified (Schramm et al., 2005). Social development should be the main objective of any democratic government (Garrafa, 2012) and vulnerability becomes the key concept to encourage the continuous dialogue process, based on the mutual commitment of overcoming the conditions that determine certain groups or individuals' susceptibility (Cunha; Garrafa, 2016).

Final Remarks

Observing the motorcyclists experience in using their vehicles, it was possible to present some notes that meet the need for respect for human vulnerability, namely: (1) potentiation of the vulnerability intrinsic to human beings - predominance of young drivers; influence of socio-cultural factors of gender and deficit of knowledge on risk situations; (2) social vulnerability - low schooling level; low income; driving low cylinder capacity motorcycles; using the vehicle for the economy it presents; and (3) the State's social responsibility facing the motorcycle use.

Some characteristics on the motorcycle users' profile encourage the reflection on the loss of the human vulnerability status, referring it to the status of harm susceptible drivers. There are, thus, variable

the put or impose to the driver disadvantage that predisposes him to danger.

By considering the respect for human vulnerability and the use of motorcycle, it becomes necessary to correlate aspect that involve social responsibility with situation of human susceptibility to harm. Cunha e Garrafa (2016) consider that the dialogue is a way of interconnecting the different approaches on the theme of human vulnerability, locally and worldwide. Therefore, it becomes essential the implementation of intervention programs that embrace economic, cultural and political dimensions, through intersectionality, in order to effectively reach all actors involved in the motorcyclist traffic dynamics, namely: State, inspection authorities, vehicle manufacturers, motorcycle users, and the general public.

Social vulnerability has its meaning oriented towards the context of unprotection of social excluded people or groups (Garrafa, 2005, 2012) - consequently, the main victims of harm involving violence in Brazil (Brasil, 2008). Public policies should go beyond traffic and meet social prejudice against young and low-income people. In that way, by incorporating the social context analysis to the bioethics, the perception of the individual as a whole was widened, in which are coordinated the social, economic and cultural dimensions (Garrafa, 2005).

References

- ALMEIDA, L. D. Suscetibilidade: novo sentido para a vulnerabilidade. *Revista Bioética*, Brasília, DF, v. 18, n. 3, p. 537-548, 2010.
- AMORIM, C. R. et al. Acidentes de trabalho com mototaxistas. *Revista Brasileira de Epidemiologia*, São Paulo, v. 15, n. 1, p. 25-37, 2012.
- ANDRADE, L. M. et al. Acidentes de motocicleta: características das vítimas e dos acidentes em hospital de Fortaleza - CE, Brasil. *Rene*, Fortaleza, v. 10, n. 4, p. 52-59, 2009.
- BRASIL. Ministério da Saúde. *Política Nacional de Atendimento Integral à Saúde do Homem*. Brasília, DF, 2008.
- BRAVEMAN, P. What is health equity: and how does a life-course approach take us further toward

- it? *Maternal and Child Health Journal*, New York, v. 18, n. 2, p. 366-372, 2014.
- CORGOZINHO, M. M.; OLIVEIRA, A. A. S. Equidade em saúde como marco ético da bioética. *Saúde e Sociedade*, São Paulo, v. 25, n. 2, p. 431-441, 2016.
- CORREA, F. J. L. Pobreza, vulnerabilidade y calidad de vida en América Latina: retos para la bioética. *Acta Bioethica*, Santiago, v. 17, n. 1, p. 19-29, 2011.
- CUNHA, T.; GARRAFA, V. Vulnerability: a key principle for global bioethics? *Cambridge Quarterly of Healthcare Ethics*, New York, v. 25, n. 2, p. 197-208, 2016.
- DINIZ, E. P. H. et al. *Recomendações técnicas para a prevenção de acidentes no setor de motofrete*. São Paulo: Fundacentro, 2006.
- ESCUADERO, D. et al. Intensive care practices in brain death diagnosis and organ donation. *Anaesthesia*, London, v. 70, n. 10, p. 1130-1139, 2015.
- FUSCO, C. C. et al. Perfil dos doadores efetivos de múltiplos órgãos e tecidos viabilizados pela organização de procura de órgãos de uma instituição pública de cardiologia. *Jornal Brasileiro de Transplantes*, São Paulo, v. 12, n. 2, p. 1109-1112, 2009.
- GANNE, N. Estudo sobre acidentes de trânsito envolvendo motocicletas na cidade de Corumbá e região, estado do Mato Grosso do Sul, Brasil, no ano de 2007. *Pan-Amazônica de Saúde*, Ananindeua, v. 1, n. 3, p. 19-24, 2010.
- GARRAFA, V. Inclusão social no contexto político da bioética. *Revista Brasileira de Bioética*, Brasília, DF, v. 1, n. 2, p. 122-132, 2005.
- GARRAFA, V. Ampliação e politização do conceito internacional de bioética. *Revista Bioética*, Brasília, DF, v. 20, n. 1, p. 9-20, 2012.
- KOTTOW, M. H. The vulnerable and the susceptible. *Bioethics*, Oxford, v. 17, n. 5-6, p. 460-471, 2003.
- KOTTOW, M. H. Vulnerability: what kind of principle is it? *Medicine, Health Care and Philosophy*, Dordrecht, v. 7, n. 3, p. 281-287, 2004.
- KOTTOW, M. H. Anotaciones sobre vulnerabilidad. *Redbioética*, Montevideo, v. 2, n. 4, p. 91-95, 2011.
- MORAES, E. L.; MASSAROLLO, B. M. C. K. Recusa de doação de órgãos e tecidos para transplante relatados por familiares de potenciais doadores. *Acta Paulista*, São Paulo, v. 22, n. 2, p. 131-135, 2009.
- MUÑOZ SÁNCHEZ, A. I.; BERTOLOZZI, M. R. Pode o conceito de vulnerabilidade apoiar a construção do conhecimento em Saúde Coletiva? *Ciência & Saúde Coletiva*, Rio de Janeiro, v. 12, n. 2, p. 319-324, 2007.
- NETO, I. L.; IGLESIAS, F.; GÜNTHER, H. Uma medida de justificativas de motoristas para infrações de trânsito. *Psico*, Porto Alegre, v. 43, n. 1, p. 7-13, 2012.
- NEVES, M. C. P. Sentidos da vulnerabilidade: característica, condição, princípio. *Revista Brasileira de Bioética*, Brasília, DF, v. 2, n. 2, p. 157-172, 2006.
- SANTOS, A. M. R. et al. Perfil das vítimas de trauma por acidentes de motos atendidas em um serviço público de emergência. *Cadernos de Saúde Pública*, Rio de Janeiro, v. 24, n. 8, p. 1927-1938, 2008.
- SCHRAMM, F. R. et al. *Bioética: riscos e proteção*. Rio de Janeiro: UFRJ: Fiocruz, 2005.
- SILVA, P. H. N. V. *Violência e morte no trânsito: associações ignoradas na prevenção dos acidentes com motociclistas*. Recife: UFPE, 2013.
- UNESCO - ORGANIZAÇÃO DAS NAÇÕES UNIDAS PARA A EDUCAÇÃO, A CIÊNCIA E A CULTURA. Declaração universal sobre bioética e direitos humanos. Paris, 2005. Disponível em: <<http://bit.ly/1TRJFa9>>. Acesso em: 22 jan. 2016.
- UNESCO - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. *Report of the International Bioethics Committee of Unesco on the Social Responsibility and Health*. Paris, 2010. Disponível em: <<http://bit.ly/2rOnDSJ>>. Acesso em: 18 jan. 2016.
- UNESCO - UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION. *Report of the International Bioethics Committee*

of Unesco on the principle of respect for human vulnerability and personal integrity. Paris, 2013. Disponível em: <<http://bit.ly/2eDBQvB>>. Acesso em: 18 jan. 2016.

VASCONCELLOS, E. A. O custo social da motocicleta no Brasil. *Revista dos Transportes Públicos*, São Paulo, v. 30-31, p. 127-142, 2008. Disponível em: <<http://bit.ly/2rkY7D9>>. Acesso em: 23 jan. 2016.

VASCONCELLOS, E. A. *Políticas de transporte no Brasil: a construção da mobilidade excludente*. São Paulo: Manole, 2013.

VIEIRA, R. C. A. et al. Levantamento epidemiológico dos acidentes motociclísticos atendidos em um centro de referência ao trauma de Sergipe. *Revista da Escola de Enfermagem da USP*, São Paulo, v. 45, n. 6, p. 1359-1363, 2011.

ZERBINI, T. et al. O impacto do atendimento às vítimas de acidentes de motocicleta na rotina do pronto-socorro do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo. *Saúde, Ética & Justiça*, São Paulo, v. 14, n. 1, p. 26-31, 2009.

Authors' contribution

Corgozinho was responsible for research conception and manuscript review. Montagner performed a critical review of the content. Both authors contributed to the writing of the article.

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