Social Norms and Alcohol Consumption among College Students: a Systematic Review

Normas Sociais e Consumo de Álcool em Estudantes do Ensino Superior: uma Revisão Sistemática

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Abstract:

Social norms may contribute to alcohol consumption in college students. Perceived consumption and peer approval during college may be predictive to alcohol intake. We intend to describe the relation between alcohol consumption and social norms in college students. A systematic literature review, through a meta-synthesis and a meta-analysis, was performed. A random-effect model to assess the effect size was performed. A total of 21 studies were included in the meta-synthesis. Of these, 8 were included in the meta-analysis. Significant associations were found between alcohol consumption and descriptive and injunctive norms, with peer pressure, consumption intention and type of consumption. It was also verified that students with higher levels of social norms were more likely to adhere to alcohol consumption. The relationship between alcohol consumption and descriptive norms may be due to students' overestimation of consumption and attitudes of their peers. The association with injunctive norms may be due to the relevance attributed to their peer's perception about their own behaviours and consumptions. Alcohol consumption is related with social norms, gender, peer influence/pressure and with alcohol consumption intention. However, the role of social approval and identity regarding alcohol consumption shouldn't be disregarded.

Keywords: Alcohol drinking; health education; primary health care; social norms; students.

Resumo:

As normas sociais poderão contribuir para o consumo de álcool em estudantes universitários. A perceção de consumos e aprovação destes por parte dos pares, poderão predizer o consumo de álcool nestes. Assim, pretende-se descrever a relação entre o consumo de álcool com as normas sociais em estudantes universitários. Estudo de revisão sistemática da literatura, concretizada através de meta-síntese e meta análise. Um total de 21 estudos foram incluídos na meta-síntese. Destes, 8 foram incluídos na meta-análise. Verificaram-se associações significativas entre o consume de álcool com as normas descritivas e injuntivas, com a pressão de pares, com as intenções de consumo e com o tipo de consumo. Também se observou que estudantes com maiores níveis de normas sociais, são mais prováveis de aderirem ao consumo de álcool. A relação entre o consumo de álcool e as normas descritivas poderá ser devido à sobrestimação dos consumos e

atitudes dos seus pares. A associação entre as normas injuntivas poderá ser devido à importância atribuída à perceção dos seus pares ao seu próprio comportamento e consumo. O consumo de álcool encontra-se relacionado com as normas sociais, sexo, influência/pressão de pares e com as intenções de consumo. Porém, o papel das aprovação e identidade social nos consumos etílicos não deve ser considerado.

Palavras-chave: Consumo de álcool; educação para a saúde; cuidados de saúde primários; normas sociais; estudantes.

Resumen:

Las normas sociales pueden contribuir al consumo de alcohol en los estudiantes universitarios. El consumo percibido y la aprobación de sus pares durante la universidad pueden predecir la ingesta de alcohol. La revisión persigue describir la relación entre el consumo de alcohol y las normas sociales entre los estudiantes universitarios. Se realizó una revisión sistemática de la literatura, a través de meta-síntesis y metanálisis. Un total de 21 estudios se incluyeron en la meta-síntesis. De estos, 8 se incluyeron en el metanálisis. Se encontraron asociaciones significativas entre el consumo de alcohol y las normas sociales, con la presión de los pares, las intenciones y tipo de consumo. También se verificó que los estudiantes con niveles más altos de normas sociales tenían más probabilidades de ingerir alcohol. La relación entre el consumo de alcohol y las normas descriptivas puede deberse a la sobreestimación del consumo de sus pares. La asociación con las normas injuntivas puede deberse a la relevancia dada a la percepción de sus pares al su propio comportamiento e consumo. El consumo de alcohol puede estar relacionado con las normas sociales, el género, la influencia / presión de los pares y con la intención de consumo de alcohol. Sin embargo, se debe de tener en cuenta el papel que la aprobación e identidad social tienen en el consumo de alcohol.

Palabras clave: Consumo de Bebidas Alcohólicas; Educación en Salud; Atención Primaria de Salud; Normas sociales; Estudiantes

Introduction

Alcohol consumption, common on college students, entails bio-psycho-social and health consequences (Schuckit et al., 2016). These consumptions are related with gender, age and previous substance consumption, e.g. marijuana (Eisenberg, Golberstein, & Whitlock, 2014; El Ansari, Vallentin-Holbech, & Stock, 2014; Kraemer, McLeish, & O'Bryan, 2015).

Different factors could be related to alcohol consumption, such as social, coping, enhancement and conformity motives (Cooper, 1994), as well as environmental and behavioural factors like peer consumption, stress, positive expectations of effects caused by alcohol consumption, perceived acceptance of their social network about alcohol consumption (injunctive norms - IN) and personal belief that their social network presents high levels of consumption (descriptive norms - DN) (Schuckit et al., 2016).

Regardless of health education and promotion efforts, students continue to present harmful health related behaviours (Cooke, Sniehotta, & Schüz, 2007; Davoren, Shiely, Byrne, & Perry, 2015; Paschall, Ringwalt, Wyatt, & Dejong, 2014).

The subject of this paper could be useful to educators and health care workers due to the importance of better knowledge concerning alcohol consumption behaviours presented by college students, to plan and implement different effective and efficient interventions, improving their behaviours.

Effective and efficient interventions to reduce negative effects of alcohol consumption should be based not only on the knowledge of consumption patterns, behaviours and prevalence, but also on the understanding of determinants and risk factors of the college students' alcohol consumption (Cooper, 1994).

Background

To understand the alcohol consumption determinants, it might be relevant to explore the social theories of consumer's behaviour.

The Social Norms Theory (Perkins, 2002) provides one of the theoretical bases of the social norms interventions because it advocates that the individual perception of how their peers act and think influences their own behaviour. There are some studies that show that the social norms are an alcohol consumption factor in college students (Wechsler & Nelson, 2008). Furthermore, college students tend to overestimate the alcohol consumption of their peers (descriptive norms) and consequently increase their own consumption (Borsari & Carey, 2003).

Therefore, through these life experiences, social norms could be perceived by college students about alcohol consumption. The student's perception of alcohol consumption (descriptive norms), as well as the acknowledged approval of their peers (injunctive norms) during the transition period to college, may be a predictor to the alcohol consumption during academic life (Scott-Sheldon, Carey, Elliott, Garey, & Carey, 2014).

On the other hand, the Theory of Normative Social Behaviour provides a bridge that explains the effect between normative beliefs and behaviours. According to this theory, the terms about subjective norms (Ajzen, 1991, cit in Gajecki et al., 2014) and social norms (Perkins, 2002) reflects the lack of clarity between two close concepts: descriptive and injunctive norms (Rimal & Real, 2005). This theory states that injunctive norms (that includes social approval or social sanctions due to certain behaviour), expectations (belief that one action might bring the benefit wanted by the individual) and groups' identity (affinity that the individual perceives with his reference group) moderate the relation between the descriptive norms and consumption behaviours (Rimal, 2008).

This theory explains alcohol consumption in order to avoid deprivation of benefits that could be associated with alcohol consumption. Essentially, while the individuals believe that their social network uses alcohol consumption to develop relationships, they might see alcohol as a socialization requirement, denominated as anticipatory socialization (the belief that alcohol facilitates the

development and maintenance of interpersonal relationships). This effect also moderates the descriptive norms (Rimal & Real, 2005).

Hence, the main research question of the present study was "What is the relation between college students' alcohol consumption with social norms?". Therefore, we intend to describe the relation between alcohol consumption and the descriptive and injunctive norms presented by college students.

Methodologies

It was performed a systematic literature review according to the recommendations of PRISMA (Moher et al., 2015) and The Joanna Briggs Institute (2015). Firstly, it was performed a meta-synthesis of study results (qualitative). Secondly, a meta-analysis guided by Cochrane's criteria (Higgins & Green, 2011) (quantitative).

In order to respond to the objective of this study, inclusion and exclusion criteria were defined, which can be observed at Table 1. Therefore, there were defined as inclusion criteria were defined articles published in English, Spanish and Portuguese, and as exclusion criteria, qualitative, review studies, opinion articles and editor letters since these do not provide primary data or not represent empirical studies. This decision was also based on the intent to perform a meta-analysis through quantitative results, provided by the included studies.

To assess the eligibility, the quality of the articles was assessed using the Critical Appraisal Tools proposed by The Joanna Briggs Institute (2016).

It was empirically decided to include studies that presented at least 50% of the items included on the checklist corresponding to the type of study (the study provided at least half of the necessary characteristics to evaluate quality), in order to evaluate their eligibility to inclusion.

Table 1 Description of the inclusion and exclusion criteria.

	Inclusion criteria	Exclusion criteria
Population of interest	- College students above ≥18 years old.	- Sub-groups of students (e.g. samples composed only by students of a certain ethnicity, religion or risk groups).
Intervention of interest	- Alcohol consumption and its relationship with descriptive and injunctive norms.	- Studies which evaluate the relation between alcohol consumption and social norms among specific sub-groups (e.g. samples composed only by male or female students, students with chronical conditions).
Comparisons of interest	- Relation between alcohol consumption and social norms among college students.	- Relation between alcohol consumption and social norms among other type of samples (e.g. samples described above).
Studies design	- Cohort studies; - Case-control studies; - Cross-sectional studies; - Observational studies; - Longitudinal Studies.	- Qualitative studies; - Reviews; - Opinion articles; - Letters to the Editor.

Variables of interest	- Sociodemographic variables; - Alcohol consumption related variables; - Health related variables; - Social norms related variables.	- Tobacco and illicit substances related variables; - Ethnics and religious related variables.

Data collection and analyses

An electronic search was done through Pub Med and Scopus using qualitative search terms ("Social"; "Norms"; "Theory"; "alcohol"; "consumption"), published and indexed on the referred databases at 13th of November 2016 (see endnote: Boolean Operators used on research can be observed [1]).

For the meta-synthesis achievement of the studies main results, five domains were defined: sociodemographic variables; DN; IN; social identity and alcohol consumption behaviours. The results were described through absolute and relative frequencies.

For the meta-analysis, information regarding sample size was collected. For the continuous variables, values of the Pearson's correlation coefficient were collected and for the categorical variables the Odds Ratio's values and respective 95% confidence intervals (95% CI) were collected.

The data analysis was done through the statistic software Comprehensive Meta-Analysis, version 3.3.070 (Biostat, 2016).

The meta-analysis was performed through the assessment of the effect size by using the OR and)95% Confidence Interval (95%CI), summarized in the forest plot (Higgins & Green, 2011; Sánchez-Meca & Marín-Martínez, 2010).

The existence of heterogeneity through the Cochrane Q test and the inconsistency measure (I^2) were assessed (Borenstein, Higgins, Hedges, & Rothstein, 2017). The between studies variance (T^2) was also observed. Due to an I^2 higher than 75% was verified (Higgins & Green, 2011), the random-effect sizes method was used to incorporate heterogeneity between studies (Higgins & Green, 2011; Sousa & Ribeiro, 2009) and to make feasible the statistical synthesis of the heterogeneous results studies (Silva & Otta, 2014). However, it was also presented the fixed effects sizes method.

A graphical observation of the funnel plot was made in order to assess the potential impact of the publication bias. Since there were less than 10 studies in the meta-analysis, tests for funnel plot asymmetry were not performed (Higgins & Green, 2011). A significance level (a) of 0.05 was used in all the analysis.

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1 ("social norms"[MeSH Terms] OR ("social"[All Fields] AND "norms"[All Fields]) OR "social norms"[All Fields]) AND Theory[All Fields] AND ("alcohol drinking"[MeSH Terms] OR ("alcohol"[All Fields] AND "drinking"[All Fields]) OR "alcohol drinking"[All Fields] OR ("alcohol"[All Fields] AND "consumption"[All Fields]) OR "alcohol consumption"[All Fields])

Results

In Figure 1, the research steps since the identification until the inclusion can be observed. After the research, performed through the terms previously described, a total of 197 studies were identified, 53 of which were duplicates. Therefore, 144 articles were analysed by title and abstract in order to evaluate eligibility, according with the inclusion and exclusion criteria. After this analysis, 115 studies were excluded due to exclusion criteria.
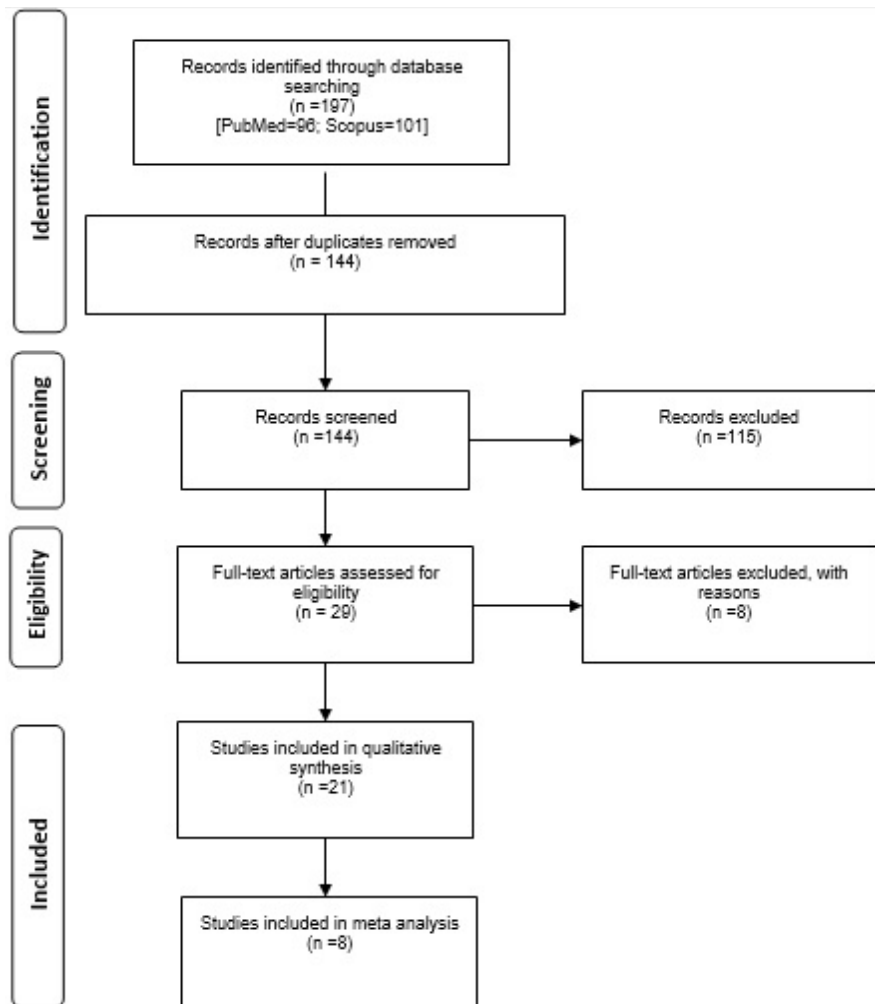

Figure 1 Systematic review flow diagram.

Twenty-nine studies were carried out to evaluate their quality and determined their eligibility. Through the full-textual analysis of the studies, 3 were excluded due to the sample characteristics and 2 by quality evaluation.

Twenty-one studies were included in the meta-synthesis. Of these, 8 were included in the meta-analysis, for providing sufficient data for its accomplishment.

Meta-synthesis

In Table 2, the main characteristics of the selected studies for the present review can be observed. Regarding the country of origin of the analysed studies, 81% were from the United States of America. Concerning the methodology used 52.4% of the studies were cross-sectional (Boot et al., 2012; Carcioppolo & Jensen, 2012; Figueroa, Cunningham, Strike, Brands, & Wright, 2009; Livingstone, Young, & Manstead, 2011; Marshall, Roberts, Donnelly, & Rutledge, 2011; Merrill, Carey, Reid, & Carey, 2014; Park, Klein, Smith, & Martell, 2009; Rimal, 2008; Rimal & Mollen, 2013; Rinker & Neighbors, 2014; Sessa, 2007), 23.8% were longitudinal studies (Ferrer, Dillard, & Klein, 2011; Merrill, Read, & Colder, 2013; Neighbors, Lindgren, Knee, Fossos, & DiBello, 2011; Pedersen, LaBrie, & Lac, 2008; Phua, 2011), 9.5% were quantitative without mentioning the study's type (Fitzpatrick, Martinez, Polidan, & Angelis, 2016; B. Fitzpatrick, Martinez, Polidan, & Angelis, 2015) and 14.3% were based in others quantitative methodologies (Arterberry, Smith, Martens, Cadigan, & Murphy, 2014; Caudwell & Hagger, 2015; Dvorak, Pearson, Neighbors, & Martens, 2015).

In what concerns the sample size, the studies varied between 20 and 6430 individuals, with a proportion between 30.0% and 52.2% of the male gender and with a mean age between 18 and 21 years old.

Regarding the theory that guided the studies about the relation between norms and alcohol consumption, 42.9% were based in the SNT.

In general, it was verified that alcohol consumption is related to the DN, due to the overestimation of their peers' alcohol consumption.

Furthermore, within the associations between alcohol consumption and the DN, a relation with the individuals' social identity was verified, due to the importance, commitment and condescendence that students demonstrated by their peers/social network.

Moreover, in a sociocultural context, where the social identity could be present, arises the influence of the peers and the social network in the alcohol consumption (IN). During the studies analysis, it was verified a relation between the alcohol consumption and injunctive norms, where the peers' influence and social approval have a role with these consumptions.

At the behavioural level, previous alcohol consumption, consumptions' intention and familiarity with these types of behaviours/consumptions exhibited relations with alcohol intake. However, a negative relation with alcohol consumption is observed in the presence of protective behavioural strategies or parental control. Individuals that presented these types of strategies revealed a smaller intake.

Through the meta-synthesis, an existence of a significant relations and/or associations with DN in 61.9% of the studies; in 42.9% of the studies with IN; in 38.1% with the students' gender; in 23.8% with the peers' influence/pressure and in 19.0% with the intention of alcohol consumption were observed.

Table 2 Selected studies characterization about country of origin, type of study, sampling, male proportion, age, study's aims and data collection (n=21). Legend: N.D. – No data

Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Fitzpatrick et al. (2016)	USA	Quantitative	N.D.	N.D.	N.D.	N.D.	Identify the peer influence on social norms effect	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Fitzpatrick et al. (2015)	USA	Quantitative; Observational	Convenience	20	N.D.	N.D.	Develop a simulated model to examine college students' alcohol consumption.	Observational based questionnaire
Rinker & Neighbors (2014)	USA	Cross-section	Random	1095	43.7	21 (1.85)	Identify the interaction between perceived descriptive norms and social identification with alcohol consumption	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: Daily drinking questionnaire; Drinking Norms Rating Form; Measure of Identification with Groups

Table 2 Cont.

Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Arterberry et al. (2014)	USA	Data from a clinical trial study	Convenience	363	34.7	20.1 (sd)	Examine the association between protective behavioural strategies and social norms theory with alcohol related consumption outcomes	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: Protective behavioural strategies scale; daily drinking questionnaire; drinking norms rating form; Rutgers alcohol problems index
Merrill et al. (2014)	USA	Cross-sectional (data from a longitudinal study)	Randomized	658	64.0	19.0 (0.72)	Identify the relation between alcohol consequences, descriptive and injunctive norms with alcohol consumption sanctions	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: Rutgers alcohol problems index; Marlowe-Crowne Social Desirability scale

Supervisão

Table 2 Cont.

Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Merrill et al. (2013)	USA	Longitudinal	N.D.	96	48.0	20.92 (0.52)	Identify if the individual differences about previous consumption, its consequences and perceived norms predict subjective evaluations and consumption behaviours	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: Brief Young adult alcohol consequences questionnaire; daily drinking questionnaire
Rimal & Mollen (2013)	USA	Cross-sectional	Convenience	719	48.5	N.D.	Identify the relation with descriptive norms and familiarity	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Pedersen et al. (2008)	USA	Longitudinal	Convenience	284	35.9	19.79 (1.13)	-Identify the relation between alcohol consumption with social context -Identify the perceived behaviours and attitudes on alcohol consumption from their group reference	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: Group attitudes scale

Table 2 Cont.

Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Neighbors et al. (2011)	USA	Longitudinal	Convenience	708	39.9	19.12 (0.57)	- Verify the confidence as a moderator on associations between perceived injunctive norms and alcohol attitudes and behaviours	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: daily drinking questionnaire
Rimal (2008)	USA	Cross-sectional	Convenience	1337	50.2	N.D.	- Identify the relations between injunctive and descriptive norms, behaviours and group identity	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Dvorak et al. (2015)	USA	Experimental	Randomized	76	46.1	19.29 (1.42)	-Identify the association between protective behavioural strategies with social norms and self-regulation	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: Protective Behavioural Strategies Scale; Modified Daily Drinking Questionnaire; Young Adults Alcohol Consequences Questionnaire
Livingstone et al. (2011)	United Kingdom	Cross-sectional	Convenience	115	46.96	20.7 (2.36)	-Identify how group norms, identity and attitudes associate with alcohol consumption behaviours	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.

Table 2 Cont.

Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Sessa (2007)	USA	Cross-sectional	Convenience	271	48.3	18.53 (0.81)	Identify the association between alcohol consumption with perceived norms on alcohol consumption	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Marshall et al. (2011)	USA	Cross-sectional	Convenience	422	37.0	18 (sd)	-Assess students' knowledge and their attitudes about institutional rules on alcohol consumption - Identify the association between alcohol consumption with social norms	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: The Campus Survey of Alcohol and other Drug Norms
Ferrer et al. (2011)	USA	Longitudinal	Randomized	239	35.98	18.3 (0.47)	-Identify the association between attitudes and behaviours on alcohol consumption with injunctive and descriptive norms;	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Park et al. (2009)	USA	Cross-sectional	Convenience	1100	46.0	20.6 (sd)	-Assess if subjective and descriptive norms represent distinct dimensions on planned behaviour	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.

Table 2 Cont.

Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Carcioppolo & Jensen (2012)	USA	Cross-sectional	Convenience	332	44.9	18.48 (sd)	-Identify the association between alcohol consumption behaviours with perceived norms (historical consumption norms, historical tradition norms)	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables. Were included validated instruments: The composite drinking scale
Phua (2011)	USA	Longitudinal	Convenience	34	N.D.	20.1 (sd)	-Assess the relation of popularity with perceived peer norms on alcohol and tobacco consumption	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Boot et al. (2012)	Netherlands, Belgium, Denmark, Finland and Sweden	Cross-sectional	Convenience	6403	37.2	51.1% between [21;24] years	-identify the association between perceived consumption (alcohol, tobacco and illicit substances) with health status and academic performance	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.

Table 2 Cont.

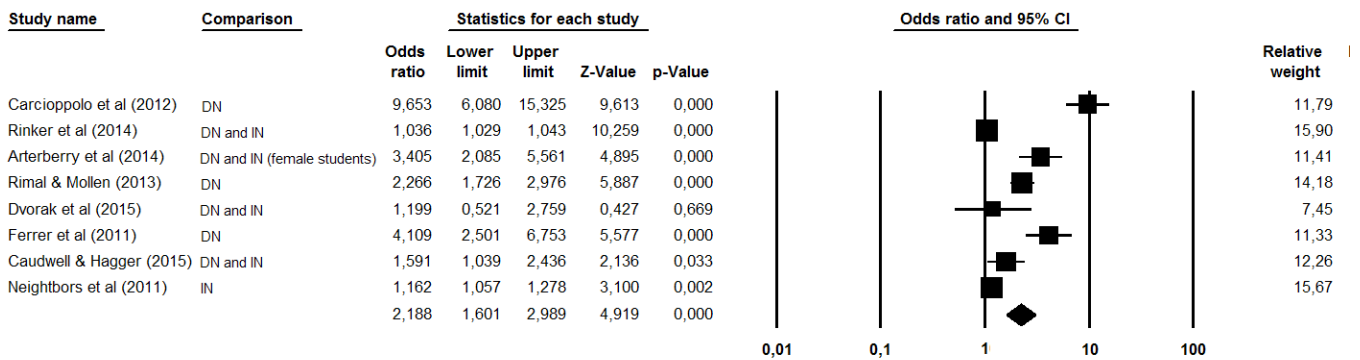| Study	Country	Type of study	Sampling	Sample (n)	Gender Male (%)	Age Mean (sd)	Aims	Data collection instruments
Figueroa et al. (2009)	Honduras	Cross-sectional	Convenience	286	30.0	21.0 (sd)	-Estimate the difference between perceived norms on consumption (tobacco, alcohol, marijuana and cocaine) by their peers and their own consumption	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.
Caudwell & Hagger (2015)	Australia	Prospective, correlational	Convenience	286	33.6	21.45 (4.35)	-Examine the association between socio-cognitive factors with alcohol consumption	Questionnaire composed by sociodemographic, alcohol consumption and social norms variables.

Meta-analysis

Through the variability effect and model heterogeneity analysis, it was decided to use the random-effects model, for being the most recommended when the heterogeneity is higher than 50% (Santos & Cunha, 2013).

Characterizing the model obtained, a low variance between studies is verified ($\tau^2=0.159$), however, it was observed a heterogeneity between studies (Q=182.684; p<0.001), with an inconsistency measure of 96.2%.

At Figure 2, the random-effects model can be observed, including 8 studies described previously.

Study name	Comparison	Odds ratio	Lower limit	Upper limit	Z-Value	p-Value		Relative weight
Carcioppolo et al (2012)	DN	9,653	6,080	15,325	9,613	0,000		11,79
Rinker et al (2014)	DN and IN	1,036	1,029	1,043	10,259	0,000		15,90
Arterberry et al (2014)	DN and IN (female students)	3,405	2,085	5,561	4,895	0,000		11,41
Rimal & Mollen (2013)	DN	2,266	1,726	2,976	5,887	0,000		14,18
Dvorak et al (2015)	DN and IN	1,199	0,521	2,759	0,427	0,669		7,45
Ferrer et al (2011)	DN	4,109	2,501	6,753	5,577	0,000		11,33
Caudwell & Hagger (2015)	DN and IN	1,591	1,039	2,436	2,136	0,033		12,26
Neightbors et al (2011)	IN	1,162	1,057	1,278	3,100	0,002		15,67
		2,188	1,601	2,989	4,919	0,000		

Figure 2 Meta-analysis forest plot, presenting OR and CI 95% for each study (effect size) and general effect size from Random Effect Model (n=8).
Total effect test: z=4.919, p<0.001. Heterogeneity: $\tau^2=0.159$; Q=182.684; df=7; p<0.001; $I^2=96.168$;
General Effect Size from Fixed Effect Model: OR = 1.038; 95% IC (1.031;1.045); z=10.911, p<0.001.

Therefore, with this model, a significant summary OR (overall random-effect) was obtained (OR 2.188; 95% CI 1.601;2.989), this is, students with higher levels of SN are more likely to present alcohol consumption. Due to the high heterogeneity, it was calculated, as well, the OR and respective 95% CI through the Fixed-Effects Method, presenting a summary OR of 1.038 (95% CI 1.031;1.045), meeting the results verified previously.

At Figure 3, funnel plot of the Logarithm's OR by the standard error can be observed, where is suggestive the presence of publication bias due to an apparent asymmetry and dispersion.
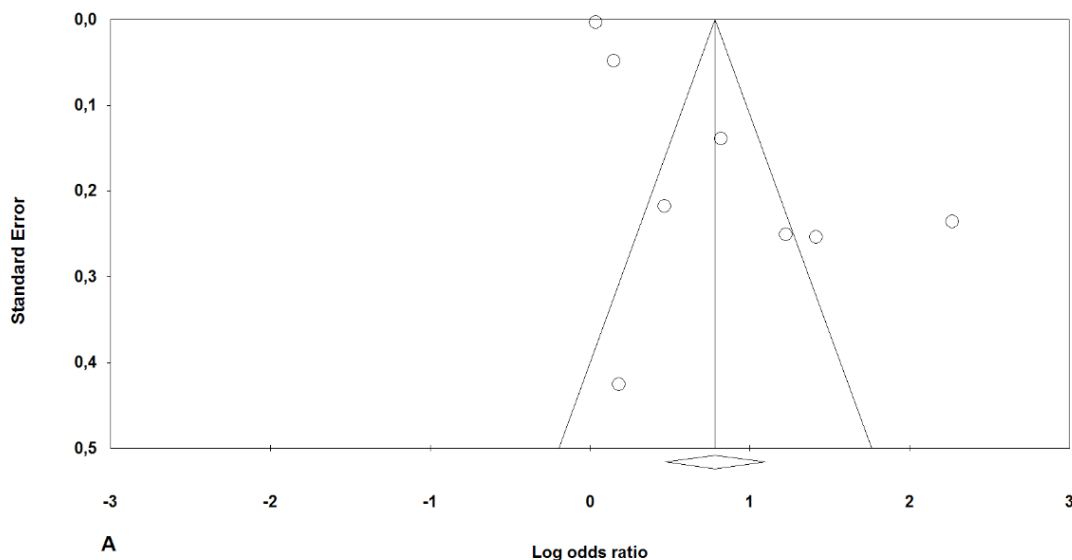
Figure 3 Funnel Plot of Log OR by Standard Error

Discussion

The results of the meta-synthesis suggested that alcohol consumption is associated with students' gender, DN, IN, peers' influence/pressure, alcohol consumption's intention and with the type of consumption. Furthermore, in a smaller proportion, there were verified a relation between consumptions and their need of social approval and social identity.

Likewise, in the results of the meta-analysis it was verified that individuals with higher levels of SN are more likely to present higher alcohol consumption behaviours (despite the limitations of this quantitative analysis, as explained furtherly).

Within the scope of the association between the DN with alcohol consumption by students, this association may be due to overestimation of the peers' consumption behaviours and attitudes (Borsari & Carey, 2001). However, it should be noted that this relation could be related to the group's identity and consumption's intentions, according to the Theory of Normative Social Behaviour (Rimal & Real, 2005).

Additionally, the results of the meta-analysis supported by the previous theory, has verified that these norms explained a 5% variance of the different consumption's intentions (Rivis & Sheeran, 2003). Other study verified a similar association between alcohol consumption with DN, due to the perceived alcohol peers' consumption and social network (Larimer et al., 2009).

In relation to the observed results between the alcohol consumption and IN, this could be due to the relevance regarding peers' opinion concerning students' behaviours and consumption (Borsari & Carey, 2003).

From the Social Norms Theory perspective (Perkins, 2002), the students' perceptions about the consumption behaviour of the group they belong to (overestimated DN), may have influenced their own consumption. During college, their peers represent a social support and a role model that may directly (e.g. peer's pressure) or indirectly (e.g. DN) influence the alcohol consumption. The indirect influences include both DN and IN (Borsari & Carey, 2001, 2003). In this way, several studies verified that these social influences represent a predictive alcohol consumption in college students (Borsari & Carey, 2003; Wood, Read, Palfai, & Stevenson, 2001).

Furthermore, there were verified in other studies that students overestimate their peers' intake, believing that their peers approve and adhere to abusive behaviours and overestimate the approval level of these types of consumption (Borsari & Carey, 2003; Perkins, 2002). In this context of peers' influence, the students will be able to choose their social network based on drinking behaviours (Ferrer et al., 2011), which may influence their SN.

The relations observed between norms and consumptions' behaviours, may be influenced through drinking intentions (Hagger, Chatzisarantis, & Harris, 2006). Furthermore, the consumption intentions may be influenced (positively or negatively) by the consequences and/or sanctions that come from the alcohol consumption, leading to behavioural change motivation (increase or decrease of the consumption) (White & Ray, 2014).

On the other hand, the observed association between drinking and social approval, may be due to the role of SN for a certain behaviour (Cialdini & Goldstein, 2004) and consumption pattern, that lead to a higher social approval (Merrill et al., 2014), influencing students' drinking intentions (Rimal & Real, 2005). Moreover, the verified association between the social identity with drinking, may be explained by the students' intention to belong to a certain social group and drinking intention (Rimal, 2008).

The present review presents as limitations the diversity of methodologies used to measure and evaluate alcohol consumption and intention, SN, peers' pressure influence, social approval and identity. However, despite these methodological differences in these measurements, the results met with what was verified in other studies (previously mentioned).

The meta-analysis has as limitations the reduced number of studies included in the analysis. However, according with different authors, there were analysed a quantity of studies higher than the minimum required to carry out this analysis. Nevertheless, it could not have the ideal statistical power (Israel & Richter, 2011; Valentine, Pigott, & Rothstein, 2010).

The differences in methodologies used in the different analysed studies (Israel & Richter, 2011) and the different instruments used to characterize the alcohol consumption and SN could explain the heterogeneity observed.

The asymmetric appearance of the funnel plot, suggestive of publication bias, could be explained by the standard error of the logarithm odds ratio being linked to the OR size, even in the nonexistence effect of small studies (Higgins & Green, 2011).

Educational Implications

Alcohol consumption is influenced by a variety of cultural norms, which are defined by beliefs, attitudes and behaviours that are important to understand the students' drinking behaviour (Grønkjær, Curtis, De Crespigny, & Delmar, 2011).

Therefore, this paper could provide information for public health workers and educators in order i) to focus on the population health needs (demystifying students' social norm), ii) to identify health determinants (of drinking behaviours) and iii) to emphasise the primary prevention level, through health education programs, to prevent and enhance health behaviours and attitudes of college students.

By understanding the influence of social norms on consumption, despite other determinants, public health workers and educators could be able to intervene with the college students who are at higher risk, recognizing that the evidence-based development of health education strategies could be favourable to the empowerment of college students' behaviours (CPHA, 2010; Kardakis, Weinehall, Jerden, Nystrom, & Johansson, 2014).

Future research could aim the conception of psycho-educational interventions, group dynamics and health education sessions, oriented to intervene in college students, having in consideration the SN (Rimal, 2008). Additionally, the developments of these kind of interventions, to be possible to demystify and clarify the self-perceptions of social norms, are relevant to change their consumption's behaviours and intentions.

Conclusion

This paper studies the link between SN and health determinants (alcohol consumption among college students), which could be used, as possible way, for a surveillance system to identify students who are possibly at higher risk of alcohol consumption. As Public Health surveillance uses established data to control and/or prevent health problems, these results could be used by Health Policy makers for evidence-based decisions (Wallace, 2007).

With the accomplishment of the present review it was verified that the college students' alcohol consumption presents a relation with social norms – descriptive and injunctive. Students with higher levels of these norms are more likely to present alcohol consumptions. However, it was verified that the association between alcohol consumption and social norms, may be due to peers' influence and pressure, social approval, social identity and consumptions' intention.

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