Citation:

González-Wilhelm L. Prevalence of alcohol and illicit drugs in blood specimens from drivers involved in traffic law offenses. Systematic review of cross-sectional studies. *Traffic Inj Prev.* 2007 Jun;8(2):189-98.

PubMed ID: 17497523

Study Design:

Systematic Review

Class:

M - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

NEUTRAL: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To determine which is the reported prevalence of alcohol and illicit drugs in blood specimens from drivers involved in traffic law offenses worldwide.

Inclusion Criteria:

- All cross-sectional studies in which prevalence rates were established after the analysis of blood specimens and chromatographic quantification of drugs (cannabinoids, cocaine, opiates, or amphetamines) in drivers involved in traffic law offenses.
- Selected studies were published between 1990 and 2005 in English, Spanish, German, Portuguese and Italian, due to the fact that chromatographic methods were not routinely applied everywhere before the 1990s.

Exclusion Criteria:

Excluded studies were those in which the results could not be reliably interpreted as a result of lacking information about the methods applied or when the findings were insufficiently detailed regarding the variables of interest.

Description of Study Protocol:

Recruitment

- The search was performed in several international biomedical databases using Ovid, PubMed, BVS, SciELO, and MedPilot
- In order to reduce publication bias, additional publications were identified using the software Copernic, consulting experts, and reviewing classical textbooks, abstract books of international conferences, and doctoral dissertations

- MeSH keywords selected included "alcohol", "ethanol", "drugs", "traffic", "epidemiological" and "prevalence"
- The present review includes cross-sectional studies published between 1990 and 2005 in English, Spanish, German, Portuguese and Italian

Design: Systematic review

Blinding used (if applicable): not applicable

Intervention (if applicable): not applicable

Statistical Analysis

- A combination of the data calculating a summary estimate of the overall results was not done considering the heterogeneity of the studies
- Selected studies were categorized into 4 groups: fatally injured drivers (Population A), drivers who survived road traffic accidents (Population B), drivers primarily suspected of driving under the influence of alcohol (Population C), and drivers primarily suspected of driving under the influence of drugs (Population D)

Data Collection Summary:

Timing of Measurements

Not applicable.

Dependent Variables

- Traffic law offenses

Independent Variables

- Reported prevalence of alcohol and illicit drugs in blood specimens of drivers
- Impairment could not be accounted for
- Expected lack of standardization in definitions of the variables and reported findings makes impossible to get in all the reviewed studies further prevalence information

Control Variables

Description of Actual Data Sample:

Initial N: 49 studies fulfilled inclusion criteria

Attrition (final N): 18 were excluded, leaving 31 in the analysis

- 12 studies of fatally injured drivers (Population A)
- 9 studies of drivers who survived road traffic accidents (Population B)
- 2 studies of drivers primarily suspected of driving under the influence of alcohol (Population C)
- 10 studies of drivers primarily suspected of driving under the influence of drugs (Population D)

Age: not described

Ethnicity: not described

Other relevant demographics:

Anthropometrics

Location: International studies, published in English, Spanish, German, Portuguese and Italian

Summary of Results:

Key Findings

- Alcohol appears to be still the predominant substance, with the consideration that among drivers primarily suspected of driving under the influence of drugs (DUID), cannabinoids are more prevalent.
- The reported prevalence of alcohol in drivers primarily suspected of driving under the influence of alcohol is (as expected) very high
- Among the illicit drugs, cannabinoids are the most commonly found substance.
- Certain trends could be identified, such as very low prevalence of cocaine in reports from Nordic countries, a high prevalence of amphetamines between Norwegian and Swedish studies, low rates of THC among Australian studies and low rates of cannabinoids and amphetamines from Scottish studies.

Ranges of Prevalence (%) of Each Substance Within the Defined Population Groups

Substance	Population A (n=11)	Population B (n=9)	Population C (n=2)	Population D (n=9)
Alcohol	22.2 - 57.1	20.0 - 26.0	88.1 - 95.5	25.8 - 49.2
Cannabinoids	0.7 - 13.2	6.7 - 16.9	2.4 - 13.8	26.1 - 59.3
Cocaine	3.1 - 5.2	0.2 - 22.2	0.0 - 3.3	1.4 - 12.5
Opiates	0.6 - 3.5	0.9 - 4.9	0.0 - 1.4	7.2 - 26.0
Amphetamines	1.3 - 7.5	0.5 - 2.2	0.0 - 2.7	4.6 - 21.1

Author Conclusion:

The results of this study should be regarded as an attempt to obtain more reliable data concerning the prevalence of alcohol and illicit drugs among drivers. To obtain a better assessment of the real current role of alcohol and drugs (illicit and medications), it seems strongly necessary to update the case-control study conducted by Borkenstein et al. in 1964, including now blood analyses of the whole spectrum of substances that can impair drivers.

Reviewer Comments:

Author notes that the expected lack of standardization in definitions of the variables and reported findings makes impossible to get in all the reviewed studies further prevalence information.

Research Design and Implementation Criteria Checklist: Review Articles

Relevance Questions		
1.	Will the answer if true, have a direct bearing on the health of patients?	Yes
2.	Is the outcome or topic something that patients/clients/population groups would care about?	Yes
3.	Is the problem addressed in the review one that is relevant to nutrition or dietetics practice?	Yes
4.	Will the information, if true, require a change in practice?	Yes

Validity Questions		
1.	Was the question for the review clearly focused and appropriate?	Yes
2.	Was the search strategy used to locate relevant studies comprehensive? Were the databases searched and the search termsused described?	Yes
3.	Were explicit methods used to select studies to include in the review? Were inclusion/exclusion criteria specified and appropriate? Were selection methods unbiased?	Yes
4.	Was there an appraisal of the quality and validity of studies included in the review? Were appraisal methods specified, appropriate, and reproducible?	Yes
5.	Were specific treatments/interventions/exposures described? Were treatments similar enough to be combined?	No
6.	Was the outcome of interest clearly indicated? Were other potential harms and benefits considered?	No
7.	Were processes for data abstraction, synthesis, and analysis described? Were they applied consistently across studies and groups? Was there appropriate use of qualitative and/or quantitative synthesis? Was variation in findings among studies analyzed? Were heterogeneity issued considered? If data from studies were aggregated for meta-analysis, was the procedure described?	Yes
8.	Are the results clearly presented in narrative and/or quantitative terms? If summary statistics are used, are levels of significance and/or confidence intervals included?	Yes
9.	Are conclusions supported by results with biases and limitations taken into consideration? Are limitations of the review identified and discussed?	Yes
10.	Was bias due to the review's funding or sponsorship unlikely?	Yes