



# ON-LINE SURVEY OF HEALTH STATUS OF DAN MEMBERS

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## INTRODUCTION

An analysis of the DAN injuries and fatalities database revealed that cardiac related causes were among the main contributors to diving deaths.<sup>1</sup> Average age of divers is increasing continuously and thus the concerns about possible effects of chronic diseases on dive safety<sup>2</sup>. The purpose of this study was to establish the prevalence of selected chronic conditions and health risk factors among DAN members, members' access to preventive health care services and their dive practices.

## MATERIAL AND METHODS

The online DAN Membership Health Survey had six modules of Behavioral Risk Factor Surveillance System questionnaire and a dive survey. 29,987 randomly selected DAN members were invited to participate. Participant's health, risk factors and access to health care services were compared with the general US population.

## RESULTS

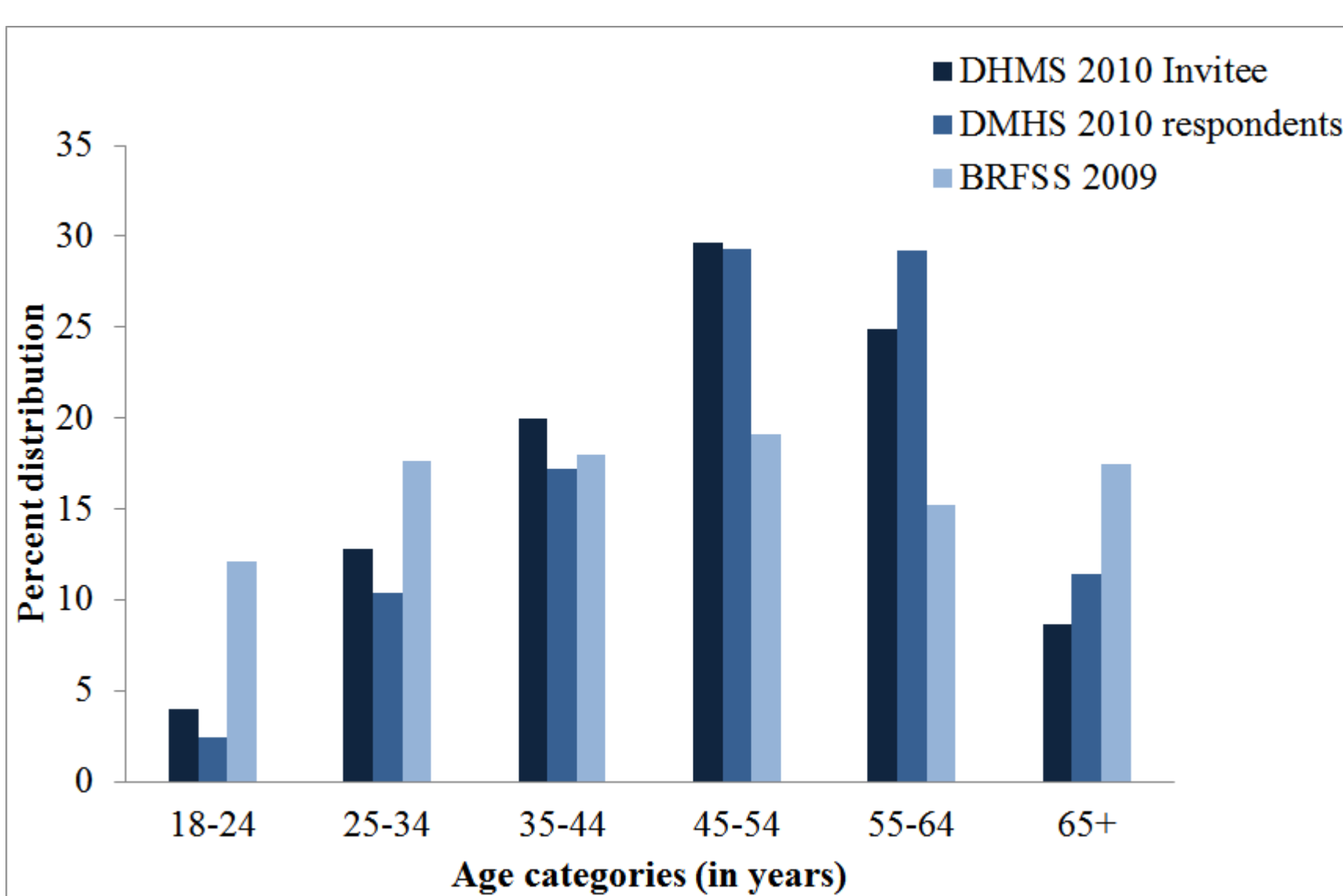
Survey was attempted by 5514 respondents (18.4%) and completed by 4876. The mean age of invitees was 48 and for respondents was 50 years ( $p < 0.05$ ). Seventy percent of respondents were older than 44 years compared to 63% of invitees and 52% of the US population. Females were equally represented among invitees and respondents (26%). Respondents received higher education (72% vs. 33.5% college graduates) and higher incomes than the US average.

Compared to the US population, the prevalence of cardiovascular disease (history of MI 1.5% vs. 3.6%; CHD 2.9% vs. 7.6%), diabetes (4.1% vs. 8%), asthma (4.4% vs. 8%), hypertension (26.1% vs. 29%) disability (9.7% vs. 18%), smoking (5% vs. 18%) and insufficient physical activity (45% vs. 49%) was less in DAN members. The prevalence of overweight respondents (BMI  $\geq 25$ , 62.6% vs. 63%) was similar in both populations. Use of preventive healthcare services was more common amongst DAN members. Median number of dives per year was 20 and mean 35 (SD=44) compared to 5 dives reported for all USA divers. Mean number of dives were similar across age groups.

### References:

1. Denoble P J, Caruso J L, Dear G de L, Pieper C F, Vann R D; Common cause of open-circuit recreational diving fatalities. Undersea & Hyperbaric Medicine. 2008; 35(6): 393-406.
2. Denoble P.J., Pollock N. Scuba Injury Death Rate Among Insured DAN Members. Diving and Hyperbaric Medicine. December, 2008; 38(4), 182-188.

## Demographics and health



**Figure 1.** Age of divers invited to participate, respondents and BRFSS 2009 respondents.

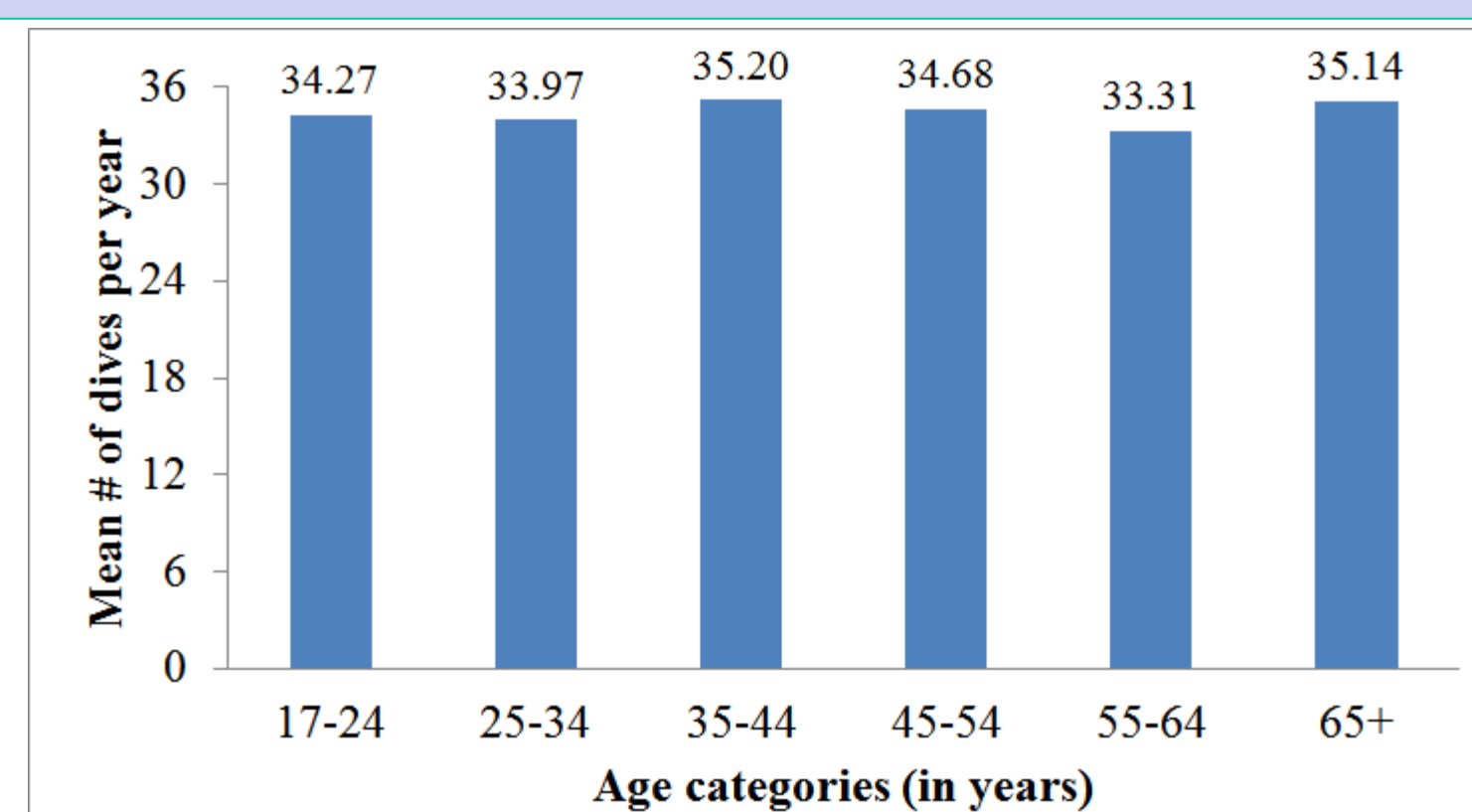
**Table 2.** Most recent medical preventive exam

Recent preventive medical exam	N	%	Mean Age
not sure	23	0.5	43.7
5 or more years	185	3.8	44.6
Past 5 years	340	7.0	45.6
Past 2 years	767	15.7	46.7
Past year	3567	73.1	51.9
Total	4882		

## Diving practice

**Table 3.** Number of dive trips and dives in the last year

n Trips	n Divers	Dives/diver/year	% Divers
One trip/year	1387	11.5	26.5
Several trips/year	2259	27.3	43.2
Once/ month	1587	64.6	30.3
Total	5233	34.4	100



**Figure 2.** Average number of dives per year and by age

**Table 4.** Prevalence of possibly dive related injuries and health problems in the last year (n = 12643)

Injury	Before diving	During diving	After Diving	Not Related to diving	Total
Crushing injuries or fractures	0.3	0.1	0.1	4.0	4.5
Headache	0.7	1.0	3.7	15.1	20.4
Sprain, Strain, Low back pain, overexertion	0.6	0.6	1.6	7.3	10.0
Puncture, Cut wound	0.6	2.4	0.4	5.3	8.8
Sprain or strain in ankle	0.2	0.1	0.1	3.0	3.4
Seasickness	4.0	1.8	2.1	0.8	8.6
Hearing loss	0.0	0.3	0.6	0.6	1.6
Ear problems (other than hearing loss)	0.4	2.8	3.5	0.6	7.3
Sinus troubles	1.3	2.0	2.1	5.2	10.5
Animal bites	0.0	0.5	0.0	1.0	1.6
Burns	0.1	0.2	0.1	1.7	2.0
Squeeze	0.0	2.6	0.4	0.1	3.1
Allergic contact dermatitis	0.0	0.7	0.4	1.6	2.7
Tooth pain	0.2	0.5	0.3	2.4	3.5
Itching, after diving	0.0	0.0	1.2	0.0	1.2
Loss of muscular strength (paralysis)	0.0	0.0	0.1	0.1	0.2
Pain in joints and/or muscles	0.3	0.4	1.3	3.8	5.7
Unconsciousness	0.0	0.1	0.0	0.6	0.7
Dizziness and giddiness	0.0	0.4	0.4	0.7	1.6
Skin rash or marbling (several hours)	0.0	0.2	0.7	0.3	1.1
Shortness of breath	0.2	0.3	0.2	0.7	1.4

In 2010, 30 respondents were advised or recommended hyperbaric treatment, of which, 14 respondents underwent a total of 21 hyperbaric treatments. Ten respondents attempted in-water recompression; one of them attempted it 5 times.

**Table 1.** Demographics and prevalence of chronic diseases and risk factors

Variable	Percentage of population	
	DAN	US (18 and older)
Age > 44 years	58.9	51.8
College education	72.0	33.5
Mean family income >\$50,000	86.7	49.0
General health good or better	96.7	85.4
History of myocardial infarction	1.6	3.9
Coronary heart disease	3.1	3.8
Hypertension	26.0	28.6
Increased cholesterol	36.9	37.5
Diabetes	4.4	8.3
Overweight (BMI 25-29.9)	41.9	36.2
Obesity (BMI $\geq 30$ )	20.7	26.9
Smoking	11.6	17.9
Insufficient physical activity	45.0	49.0
Disability	9.6	18.8

## CONCLUSIONS

➤ The prevalence of chronic diseases and health risk factors among DAN members is similar to the general population.

➤ DAN members have good access to preventive health care services and it appears that most use it as recommended.

➤ It appears that older divers dive with similar frequency as younger divers but they may mitigate their risks in other ways which may be revealed with subsequent studies.