

# Relationship between MN Acquired During Childhood and Adult MN Count and Melanoma Risk: a 24 year Follow-up Study

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## Introduction

Cutaneous melanoma (CM) is the 3rd most common cancer in Australia, and the incidence rate continues to rise by 13,000 cases annually; it is the most common cancer in young Australians aged 15-39<sup>1</sup>. The literature suggests that number of MN acquired by adulthood is indicative of CM risk, and exposure to sunlight is linked to childhood MN<sup>1,2</sup>. To date, no study has followed a cohort 25 years on for MN counts. Thus, better understanding of the relationship between MN counts in childhood and adulthood may help identify individuals at high risk of CM early enough to implement preventive strategies to reduce their risk.

## Methods

**Sample selection:** As many of the original 506 participants<sup>2</sup>. Final sample size n=51. Participants recruited via the Australian Electoral Commission, a TV interview with Channel Ten, and social media.

**Data collection:** Consent, information sheets and a self-administered questionnaire were mailed to participants. Whole body skin checks (30 body sites as per IARC protocol)<sup>3</sup>, skin reflectance and dermatoscopic examination occurred in Townsville Hospital clinic. Whole back photos were taken for reference and any MN 5mm or over were reviewed.

**Data analysis:** Relationship between childhood MN and incident number of MN in adulthood was the main variable. Explanatory variables analysed were phenotypic traits and sun-exposure behaviours, using bivariate non-parametric testing and a multivariate regression model.

**Ethics:** HREC number H6190.

## Results

The mean participants' age at the initial examination was 3.59 years, with a median 3.17 years. The mean duration of follow-up was 23.5 ± 1.9 years (mean of 24 years) with an almost even gender split sample.

Table 1: Incident MN count was positively correlated with childhood MN count ( $r=0.71$ ,  $p<0.001$ ). Other significant variables are outlined in tables 2 and 3.

Data was analysed with a regression analysis model, where the adult MN count is the outcome variable. The proposed model identified: freckling, MN counts as a child, age at follow-up and time spent outdoor, as significant, with  $r^2=0.618$ .

Sun sensitivity (burning vs tanning) was borderline significant at  $p=0.059$ .

Of note, the entire sample had at least one MN excised, with the majority having up to 5 excised so far. Final histology was benign except for one participant had 1 stage 1 melanoma excised from her back at age 24 (Figure 1).

## Discussion

In this paper, we reported the findings of the world's only cohort study<sup>4</sup> that examines MN incidence in a sample re-examined 24 years from their baseline. The main novel outcome of this study showed incident MN count was positively correlated with childhood MN. As previously recorded in the literature<sup>2,4</sup>, we also found that fair-skinned participants acquired more MN than olive-skinned participants, as did freckled participants and those with poor tanning ability. Participants who spent ≥5 hours/day outdoors last year acquired more MN than those outside ≤1/day. Our findings of spectrophotometry and additional variables are available for future studies with more participants.

Table 1: Median incidence rate (new MN/year) and MN quartile as a child

	% (n)	MN Incidence rate (new MN/yr)		KW p=0.048
		Mean ± SD	Median [IQR]	
0-25 <sup>th</sup> percentile	23.5% (12)	5.7 ± 3.7	4.7 [2.5, 8.7]	
25-49 <sup>th</sup> percentile	23.5% (12)	6.6 ± 7.1	6.6 [4.7, 10.5]	
50-74 <sup>th</sup> percentile	29.5% (15)	11.0 ± 4.9	10.4 [8.2, 14.3]	
75-100 percentile	23.5% (12)	13.2 ± 8.8	13.3 [4.4, 20.3]	

Table 2: Significant phenotypic traits Table 3: Significant sun-exposure behaviours

Phenotypic Trait	KW/MWU	SE Behaviours	KW
Light skin	p=0.013	Tanning ability	p=0.036
Freckling	p<0.0001	Time spent outdoors	P=0.032

## Conclusion

Our study suggests that MN incidence rate increases significantly in line with quartile of MN at baseline. Hence risk in terms of rate of acquisition of MN can be determined in early childhood, and thus intervention by primary and secondary prevention strategies should be intensified in early childhood, when they are more likely to succeed.

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## References

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Figure 1: Reference back photo

