SKIN CANCER DETECTION RATES IN TOTAL BODY SKIN EXAMINATIONS DURING FIRST HALF VERSUS SECOND HALF OF SHIFT; A RETROSPECTIVE REVIEW

Adam Rosencrans, BS & Catherine Harrell, MD

Burnett School of Medicine, Dermatology Specialists of Fort Worth

RESEARCH QUESTION

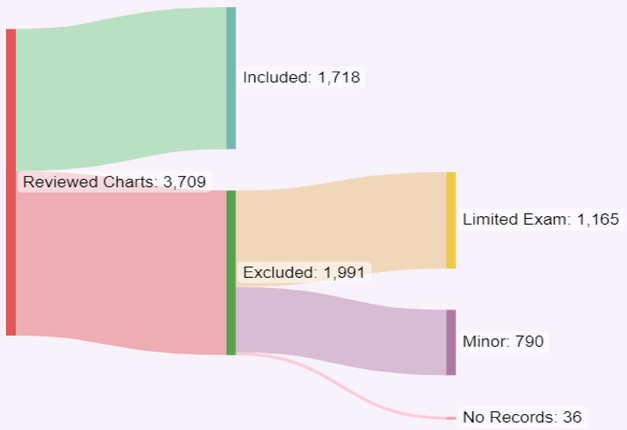
Among licensed Dermatologists, is there an association between hours worked prior to examination and a reduction in Skin Cancer Detection Rate (CDR) during Total Body Skin Examinations (TBSEs), when measured as 1st vs 2nd half of work shift?

BACKGROUND

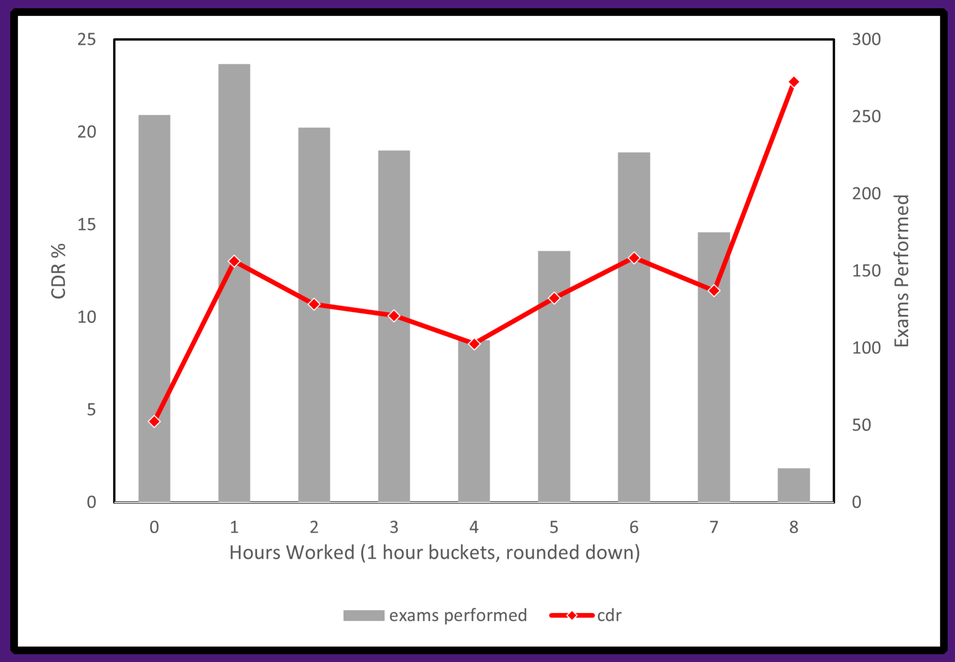
- **Previous research:** higher rates of colon cancer detected during morning colonoscopies compared to afternoon
- **Theorized reason:** progressive fatigue among practicing physicians
- **Focus of this project:** does the same principle apply to the field of dermatology?
- **Goal:** to determine if the timing of skin exams can impact the detection rate of skin cancer
- **Importance:** early detection of skin cancer can improve patient outcomes and reduce healthcare costs

METHODS

- **Design:** retrospective chart review performed on 3,709 medical charts for skin exam findings
- **Inclusion criteria:** included Total Body and Above Waist exams but excluded "spot" checks and exams performed on vulnerable populations
- **Data collection:** total number of skin checks, hours worked by physicians prior to exam, and number/description of biopsy-confirmed skin cancers found
- **Data analysis:** descriptive statistics, Student's T-tests, Pearson's Chi-square tests for significant differences between exams performed in 1st vs 2nd half of shift.
- **Conclusions:** comparison made for demographics, cancer pathology, and cancer detection rate (CDR)



Dermatologists detect **consistent** skin **cancer** rates throughout their **shift**, unlike previous studies on **colonoscopies**.



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RESULTS

- **Demographics:** 38.1% male, 42.7% with a history of skin cancer, average age of 58.7, minimum age of 18, and maximum age of 95
- **Cancer (whole dataset):** 10.7% had positive cancer findings, with basal cell carcinoma being the most common pathology (58.5%) and 84.7% of subjects having only a single lesion
- **Cancer detection rate:** overall CDR was 10.7%, higher in subjects with a history of skin cancer (16.6%) and in males (14.2%). CDR increased with age, from 1.0% in 18-29-year-olds to 18.9% in those over 80
- **1st vs 2nd half of shift:** No significant differences in demographics or cancer characteristics were found between the first and second half-of-shift groups, including demographics and CDR
- **Future analysis:** pending access to full dataset, including the p-value of CDR in relation to different variables and a regression analysis of CDR by hours worked

Table 2. Demographics of 1st vs 2nd half of shift

Factor	1st Half (*n*=1,059)	2nd Half (*n*=659)	*P* value
Age, mean (yrs) (s.d.)	58.4 (16.1)	59.1 (16.9)	0.385
Gender			0.365
Male	412 (38.9%)	242 (36.7%)	
Female	647 (61.1%)	417 (63.3%)	
Hx of Skin Cancer			0.578
Yes	458 (43.2%)	276 (41.9%)	
No	601 (56.8%)	383 (58.1%)	
CDR %	104 (9.8%)	79 (12.0%)	0.157

CDR, cancer detection rate
P value calculated by 2 tailed, unpaired, equal variance t-test for age,
chi-square test of independence otherwise

Table 3. Lesion Characteristics of 1st vs 2nd half of shift

Factor	1st Half (*n*=1,059)	2nd Half (*n*=659)	*P* value
Location			0.173
Head	34 (32.7%)	22 (27.8%)	
Neck	7 (6.7%)	3 (3.8%)	
Trunk	23 (22.1%)	16 (20.3%)	
Upper Ext.	22 (21.2%)	24 (30.4%)	
Lower Ext.	11 (10.6%)	3 (3.8%)	
Multiple	7 (6.7%)	11 (13.9%)	
Pathology			0.562
BCC	63 (60.6%)	44 (55.7%)	
SCC	27 (26.0%)	26 (32.9%)	
Melanoma	7 (6.7%)	5 (6.3%)	
Other	3 (2.9%)	0 (0.0%)	
Multiple	4 (3.8%)	4 (5.1%)	
Multiplicity			0.428
1	90 (86.5%)	65 (82.3%)	
2+	14 (13.5%)	14 (17.7%)	

BCC, Basal Cell Carcinoma; SCC, Squamous Cell Carcinoma; Ext, Extremity
P value calculated by Fisher's Exact Test for pathology, chi-square test of independence otherwise

FUTURE DIRECTIONS

- **Generalizability:** future studies should aim to include a larger, more geographically diverse group of dermatologists
- **Self-reported fatigue:** a prospective study examining self-reported physician fatigue values prior to each exam would reduce assumptions made around fatigue
- **Biopsy yield:** future research could investigate the percentage of biopsies ordered by the physician that yield a positive result for cancer
- **Intervention:** an intervention-based study could explore the effects of structured practice variations, such as conducting all TBSEs in the morning or afternoon, on CDRs