

SUMMARY OF INCLUDED STUDIES

(1)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Following Medial School Graduates</p> <p>Alexander, <i>et al.</i> <i>Acad Med</i> supp. 2000</p>	1996-1998	To assess the contributions of academic assessments at various intervals during medical school to ratings of residency performance	Retrospective cohort	338	<ul style="list-style-type: none"> ▪ USMLE I ▪ USMLE II ▪ GPA year 2 clerkship year 3 composite ▪ Cumulative composite score at graduation ▪ Ranking Top third Middle third Lower third 	<p>Performance in residency, by supervisor rating in:</p> <ul style="list-style-type: none"> ▪ Primary care residency ▪ Surgery 	<ul style="list-style-type: none"> ▪ Cronbach's alpha of supervisor rating 0.94 ▪ Pearson correlations ▪ ANOVA to compare sub-groups means 	<ul style="list-style-type: none"> ▪ USMLE I - $r = 0.2$ ▪ USMLE II - $r = 0.24$ ▪ GPA year 2 - $r = 0.2$ ▪ GPA year 3 - $r = 0.41$ clerkship ▪ Composite cumulative - $r = 0.32$ ▪ All GPA $P = < .000$ ▪ Year 2 GPA and resident humanistic quality $r = 0.07$; $P = 0.12$ /not significant ▪ Conclusion: low magnitude correlations, but statistically significant except with humanistic quality ▪ Academic performance explained less than 20% of the variance in residency performance ▪ Strength of correlation between clerkship GPA and residency assessment may have been due to 'method effect' of the ratings.
							<p>i.e. similarity in the subjective assessment by directors of residency programmes and attending ratings of students clinical performance</p>	

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Medical School Achievements as Predictors of Performance</p> <p><i>Amos, et al. Acad Med 1996</i></p>	1959-1991	To determine the relationships between medical school achievements and clinical or academic performance of residents in physical medicine and rehabilitation, performance on board examination and entry into academic practice	Retrospective cohort	205 Residents	<ul style="list-style-type: none"> ▪ Age, ▪ Sex ▪ Research experience ▪ Advanced degree ▪ Failed classes or clerkship ▪ Honors grades, class rank 	<ul style="list-style-type: none"> ▪ Annual evaluation scores of residents ▪ Publications ▪ GPA on masters degree ▪ Board scores ▪ Post-residency outcome variables: Fellowship, career selection (academic versus clinical) 	<ul style="list-style-type: none"> ▪ Chi-square analysis of variance, linear and logistic regression 	<ul style="list-style-type: none"> ▪ Clinical residency performance was predicted by clerkship honors grades (P = .0001) ▪ Probation was predicted by failing a basic science course (P=.0001) ▪ Written board performance was related to Alpha Omega Alpha status (P=.04) ▪ Failing written boards on the first attempt was predicted by failing a basic science course (P=.05) ▪ Entry into an academic PMR practice was predicted by an interest in the practice in personal statement of the residency application (P=.002) and writing a thesis in medical school (P=.03)

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>The Empirical Association between student and Resident physician Performance.</p> <p>Arnold & Willoughby; <i>Acad Med</i> supp. 1993</p>	<ul style="list-style-type: none"> • Medical School • (1980-1983) • Residency 	<p>Are categories of students performance levels associated with their standings on clinical performance ratings as residents? Is the association between performances in combined degree program residency stronger when measures are conceptually similar?</p>	<p>Retrospective cohort</p>	<p>298 (a combined degree program)</p>	<p>Clerkship GPA</p> <p>Clerkship rating</p> <p>Final Year MD exam scores and subscores</p>	<p>Supervisor rating for year one residency</p>	<p>Distribution free</p> <ul style="list-style-type: none"> ▪ Statistics ▪ Chi-square ▪ Factors analysis 	<ul style="list-style-type: none"> • 45% of subjects in same performance categories as students and residents • Agreement between high and low levels of student residency performance • Students clinical performance component was strongest correlate of residency clinical performance (Contextual variables-) $r = 0.3$ $P < .001$

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Selection of obstetrics and gynecology residents</p> <p>Bell, <i>et al.</i> <i>Am J Obs Gyn</i> 2002</p>	<p>Medical School and Residency I Obstetrics & Gynecology 1995-1999</p>	<p>Whether USMLE scores predict residents in training examination scores</p>	<p>Retrospective cohort</p>	<p>24 Residents</p>	<ul style="list-style-type: none"> ▪ USMLE I ▪ USMLE II ▪ Number of hours in clinical rotations (five) ▪ Global assessment of applicant composite score of selection 	<ul style="list-style-type: none"> ▪ Supervisors ratings in PGY 1-4 four categories ▪ Clinical judgment ▪ Patient rapport ▪ Surgical ability ▪ Work ethics ▪ In-training examination PGYs 1-4 'GREOG' Council on Residents Education in Obstetrics and Gynecology 	<ul style="list-style-type: none"> ▪ Linear regression ▪ Spearman rank correlation to assess relationships among individual components and external measures 'Contents and Construct Validity' 	<ul style="list-style-type: none"> ▪ USMLE I significantly predicted performance on PGY 1-3 GREOG examination $P < 0.05$ ▪ USMLE II significantly predicted performance on GREOG examination in all 4 years $P < 0.05$ ▪ USMLE I did not correlate with PGY4 CREOG scores ▪ CREOG did not correlate with resident performance as measured by faculty evaluation ▪ No association between medical student composite scores and resident performance scores.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Further Psychometric Evaluations of a Class Ranking Model as a Predictor of Graduates' Clinical Competence in First Year of Residency.</p> <p>Blacklow, Goepp, Hojat <i>Acad Med</i> 1993</p>	<p>1991, 1992, 1986-19</p> <ul style="list-style-type: none"> • Medical school • Internship 	<p>To investigate the psychometrics of a class ranking model</p> <p>Is there a linear relationship between class ranks and ratings of postgraduate competence</p>	<p>Retrospective Cohort</p> <p>Faculty judged graduates' potential to become competent physicians.</p> <p>Student rankings compared to ratings received from faculty.</p> <p>Directors' rated data-gathering skills of graduates at end of internship.</p>	<p>Part I 215 graduates of Jefferson</p> <p>Part II 598 graduates</p>	<ul style="list-style-type: none"> • Class Ranks • Basic science grades • Clerkship – clinical ratings in 3rd year 	<p>Supervisor rating at the end of the first year of residency</p>	<p>Concordance rates between faculty ratings and class ranking model</p>	<ul style="list-style-type: none"> ▪ The <u>means</u> of both measures of medical school performance increased significantly with increases in the levels of postgraduate clinical ratings, suggesting a linear relationship. ▪ Concordance rate 85% between ranks and ratings support validity of ranking model.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Information Collected During the Residency Match Process Does Not Predict Clinical Performance</p> <p>Borowitz, Saulsbury & Wilson. <i>Arch Pediatr Adolesc</i>, 2000</p>	<p>Pediatric residents over a 7 year period at the University of Virginia</p> <p>1994 - 1997</p>	<p>To determine whether information collected during the national residency matching program predicts clinical performance during residency as evaluated by 10 faculty members</p>	<p>Retrospective Study</p>	<p>69 pediatric house officers</p>	<ul style="list-style-type: none"> ▪ Rank on matching list ▪ Score on NBME I ▪ Grade on pediatric and internal medicine clerkship ▪ AOA ▪ Scores of faculty interviews during interim application ▪ Pediatric in service examination ▪ Scores of American Board of Pediatrics 	<ul style="list-style-type: none"> ▪ Supervisors ratings of clinical performance 	<ul style="list-style-type: none"> ▪ Kappa for agreement between raters ▪ Linear regression ▪ T-test, analysis of variance 	<ul style="list-style-type: none"> ▪ Medical School Grades, Performance on NBME I, Interviews during the interim application process and match-list ranking are not predictors of clinical performance during residency.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Does Medical School Performance Predict Radiology Boyse, <i>et al. Acad Radiol</i> 2002	1991-2000	To determine the relationships between medical school achievements and clinical or academic performance of residents in physical medicine and rehabilitation, performance on board examination and entry into academic practice	Retrospective cohort	77 Radiology Residents	<ul style="list-style-type: none"> ▪ Grades ▪ Dean's letter ▪ Letters of recommendation ▪ AOA ▪ NBME I & USMLE I 	<ul style="list-style-type: none"> ▪ Rotation evaluations supervisor rating ▪ Retrospective faculty recall scores ▪ American College of Radiology (ACR) ▪ American Board of Radiology (ABR) examination scores 	<ul style="list-style-type: none"> ▪ Student to test ▪ Analysis of variance ▪ Correlation coefficients 	<ul style="list-style-type: none"> ▪ Preclinical grades of honors or A ▪ Clinical grades of honors in medicine, surgery, high NBME/USMLE I predicted success on ABR written examination, but did not predict rotation performance ▪ Dean's letter, letter of recommendation AOA, high medical school prestige did not predict high examination scores or supervisor rotation performance.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Measurement of clinical reflective capacity early in training as a predictor of clinical reasoning performance at the end of residency: An experimental study on the script concordance test Brailovsky, <i>et al. Med Edu</i> 2001	1996	To verify whether scores obtained by students at the end of the clerkship predict their clinical reasoning performance at the end of residency	Cohort comparative study prospective of scores	24 students	Scores on SC end of clerkship	Scores on <ul style="list-style-type: none"> ▪ Short answer management problem (SAMP's) ▪ Simulated Office Orals (SOO) ▪ OSCE 	Pearson correlation	<ul style="list-style-type: none"> ▪ SC and SAMP correlation $r = .451$ $P = 0.01$ ▪ SC and SOOs $r=0.447$ $P = 0.015$ with OSCE $r = 0.340$

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Validity of faculty ratings of students' clinical competence in core clerkship in relation to scores on licensing examinations and supervisors' ratings in residency</p> <p>Callahan, <i>et al.</i> <i>Acad Med</i> supp. 2000</p>	<p>1989 – 1998 Medical School Residency</p>	<p>Examine the validity of faculty rating of students clinical competencies in core clinical clerkship in relation to student subsequent performances on medical licensing examination and program directors' ratings.</p>	<p>Retrospective cohort</p>	<p>2158</p>	<p>Global ratings of student clinical competencies in six core clerkships</p>	<ul style="list-style-type: none"> ▪ USMLE II ▪ USMLE III ▪ Supervisors ratings of clinical performance in year 1 ▪ Residency “data gathering skills ▪ Interpersonal skills and attitudes ▪ Socioeconomic aspects of patient care 	<ul style="list-style-type: none"> ▪ Bivariate correlation ▪ Multiple regression analysis 	<ul style="list-style-type: none"> ▪ All correlations reported are statistically significant, but of low effect size ▪ Highest correlations 0.29 and 0.2 between internal medicine clerkship and steps 2 and 3 USMLE lowest correlations 0.17 psychiatry and 0.11 surgery clerkships ▪ Correlations with postgraduate clinical competence statistically significant, but low effect size ▪ Highest internal medicine clerkship and data gathering skills 0.27, lowest between surgery and psychiatry clerkship and postgraduate clinical competence 0.1 and 0.09

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Validity of NBME part 1 and part II scores for selection of residents in orthopedic surgery, dermatology, preventive medicine. Case & Swanson, <i>Acad Med</i> supp. 1993	1991 • Medical school • Residency	How accurately do NBME scores predict criterion measures of success in residency training?	Retrospective cohort	Ortho= 656 Derm= 219 Prev.=169	NBME I, II	Specialty Board Exam Scores	Regression analyses correlations	<ul style="list-style-type: none"> ▪ Patterns of high low scores on NBME Parts I and II <u>generally related</u> to skills required in the specialty areas. Is this a reflection of the examinee's preferred specialty or the programs selecting that person. ▪ NBME Parts I and II scores provided a good predictor of specialty board performance. Part II, generally better than part I. ▪ Part I or II scores below 400, examinee more likely to fail specialty boards. Predict <u>BUT</u> should not be sole criteria.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>The General Practitioner: A study of medical education and practice in Ontario and Nova Scotia</p> <p>Clute, Univ Toronto 1963</p>	<p>1961 – 1963</p> <ul style="list-style-type: none"> • Medical School • General Practice 	<p>To determine relationship between medical school academic marks and quality of practice in Ontario and Nova Scotia</p>	<p>Survey</p>	<p>85 Canadian GPs</p>	<p>Academic marks in clerkship</p>	<ul style="list-style-type: none"> ▪ Quality of practice 	<p>Pearson correlation</p>	<p>Relationship between academic and career performance – slight, positive, significant correlation of .56 in Ontario (N – 23), but also strong negative relationship between age and grades and quality of practice; in Nova Scotia (N = 39), positive, non-significant correlation of .24.</p>

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Relationships of intern's performance to their self-assessments of their preparedness for Internship and to their Academic Performances in Medical school</p> <p>Fincher, Lewis, Kuske <i>Acad Med</i> supp. 1993</p>	<ul style="list-style-type: none"> • Medical School • (1990-1991) • Internship 	<p>Do medical students' cumulative GPA correlate with performance assessments?</p> <p>Do medical students' self assessments of preparedness for internship correlate with internship directors' assessments?</p> <p>Does med school academic performance predict performance in specific competencies as assessed by program directors?</p>	Retrospective cohort	138/114 (1990) 145/104 (1991) 133 self-rating	<ul style="list-style-type: none"> • Cumulative GPA • Medical School GPA rank • Student self-assessment 	Supervisor rating for year one residency	<ul style="list-style-type: none"> • Pearson Correlation Coefficients • Cross tabs • Chi-square • Multivariate • ANOVA 	<ul style="list-style-type: none"> • GPAs of students who chose university based residencies significantly higher than those who chose community based - GPA predicts overall performance in specific competences in internship year. $r = 0.28-0.51$ • Ranking between med school internship year was different rather inconclusive. • Medical school academic performance relates significantly to performance in internship.

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Do criteria predict resident performance</p> <p>Fine & Hayward, <i>Acad Med</i> supp. 1995</p>	<ul style="list-style-type: none"> • Medical School • Residency 	<p>Factors considered by Res. Programs when selecting residents and whether factors predict resident performance</p>	<p>Retrospective cohort</p>	<p>123 Residents 308 appl.</p>	<p>Clerkship GPA</p>	<p>Overall rating (over several years)</p>	<p>Multivariate liner regression</p>	<ul style="list-style-type: none"> • Significant independent relationship between medical school clerkship (International Medicine grade) and residency performance. • ISCs over emphasize of AOA, scores of medical school reputation. • Best predictor of overall residency performance were internal medicine clerkship honors and graduation from home institution.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Correlation of Standardized Testing Results</p> <p>Fish, <i>et al. Am J Phys Med Rehab</i> 2003</p>	2001 (POE)	To determine the relationships between medical school achievements and clinical or academic performance of residents in physical medicine and rehabilitation, performance on board examination and entry into academic practice	Survey	86 Residents	<ul style="list-style-type: none"> ▪ Self assessment examination (SAE) ▪ USMLE I ▪ USMLE II ▪ USMLE III ▪ Comprehensive Medical Licensing Exam (COMPLEX) 	<ul style="list-style-type: none"> ▪ POE scores and ranking 	<ul style="list-style-type: none"> ▪ Spearman rank correlation (rho) ▪ χ^2 	<ul style="list-style-type: none"> ▪ 12 Residents (14%) thought SAE correlated with POE; 53.5% 'somewhat' 32% did not correlate well. 60.5% thought the SAE was easy; 8.1% more difficult and 31.4% same difficulty ▪ Participation in a board review courses did not correlate with quartile ranking on POE $r_s = -0.2$ ▪ All residents in the lowest quartile failed the POE ▪ Higher performance on standardized test USMLE I, II, III/ COMPLEX, SAE correlate with POE ▪ SAE $r_s = 0.581$ $P < 0.001$ ▪ Passing 1st attempt all USMLE 0.295 $P < .007$

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>An empirical study of the predictive validity of number grades in medical school using 3 decades of longitudinal data: implications for a grading system</p> <p>Gonnella, Erdmann & Hojat, <i>Med Edu</i>, 2004</p>	<p>1970 – 1999</p> <ul style="list-style-type: none"> • Medical School • PG 1 	<p>To examine predictive validity of number grades in medical school</p>	<p>Prospective cohort study</p>	<p>6656 medical students</p>	<ul style="list-style-type: none"> ▪ GPA year 1 ▪ Number grades 	<ul style="list-style-type: none"> ▪ GPA year 2 ▪ GPA clerkship ▪ Medical school class rank ▪ USMLE 1, 2, 3 ▪ Supervisor rating PG 1 	<ul style="list-style-type: none"> • Mean comparison ▪ X² ▪ ANOVA ▪ Effect size 	<p>Ratings of clinical competence beyond medical school are predicted by number grades in medical school</p>

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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Premedical and Medical School Performance in Predicting First Yr Residency Performance. Gunzburger, <i>et al. J Med Edu</i> 1987	1982, 1984 (62) (123) • College • Medical School • Residency (Internship)	Relationships among measures of college and medical school performance and competence in 18 medical care tasks in PGY I.	Retrospective Cohort	185 Graduates of Loyola	<ul style="list-style-type: none"> • NBME II Scores • Clerkship grade • NBME I • GPA • MCAT 	<ul style="list-style-type: none"> • Rating by supervisor for year one residency 	<ul style="list-style-type: none"> • Factor analysis • Stepwise multiple regression • Rash model item analysis 	<ul style="list-style-type: none"> • College and medical school academic achievement not best predictors of resident's competence. • High correlation found between: (1) NBME part II scores and residency competence ratings (i.e. test measures what it should – MBA) P = .005 (2) Clerkship grades.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Is the Glass Half Full or Half Empty? A Reexamination of the Associations Between Assessment Measures during Medical School and Clinical Competence after Graduation</p> <p>Hojat, <i>et al.</i> <i>Acad Med</i> supp. 1993</p>	<ul style="list-style-type: none"> • Medical School • Internship (1980 – 1990) 	<p>Investigate associations between performance during medical school and in the first year of residency.</p> <p>Hypotheses:</p> <ol style="list-style-type: none"> 1) There is high correlation between medical school measures of performance and measures obtained at end of internship 2) Objective measures of medical knowledge attained during medical school and one year after graduation are highly correlated 3) Students' low or high academic standings in medical school are directly and significantly associated with their subsequent clinical competence ratings as residents <p>The association between academic standings in medical school and status on clinical competence ratings as residents is stronger for measurements that are conceptually more similar than dissimilar.</p>	<p>Retrospective cohort</p>	<p>1,724 graduates Total = 2368</p>	<ul style="list-style-type: none"> • NBME I, II • Objective Clinical Exam • Preclinical exam Grades 	<p>NBME III</p>	<ul style="list-style-type: none"> • Factor analysis Distribution free statistical measures used • Chi-square • Pearson Product-moment correlations 	<ul style="list-style-type: none"> ▪ Associations exist between performance measures in medical school and those after graduation. ▪ Conceptually similar measures yield stronger associations than dissimilar ones. Need to refine assessment instruments. ▪ Associations among performance measures in medical school increase drastically when selected measures of personality are included in prediction models.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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Residency Program Director Evaluations Do not Correlate With Performance on a Required 4 th Year OSCE . Kahn, <i>et al.</i> <i>Teach & Learn in Med</i> 2001	<ul style="list-style-type: none"> • (4th Year) Medical School • Internship 	Correlate performance on 4 th year OSCE with residency program director assessment also class rank and USMLE scores	Retrospective Cohort 25 highest scoring 25 lowest scoring examinees. 5 point Likert Scale used by program directors	50 Graduates from Tulane	NBME I, II Objective Clinical Exam in Senior year Class ranking	Supervisor rating for year one residency History taking PE, interpersonal skills and overall medical knowledge.	<ul style="list-style-type: none"> ▪ Mann-Whitney tests (ordinal data) ▪ Pearson's correlations ▪ Spearman's rho analysis 	<ul style="list-style-type: none"> • Program directors scores did not correlate with class rank or USMLE scores, < .26 or TOSCE < .27, P < .08. • No individual score from prog. Director was significantly different between OSCEHI and OSCELO. • Strong correlations between USMLE scores and class rank. • Prog. Directors do poor job of assessing clinical comp.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Can Success in the Surgical Residency be Predicted from Pre-residency Evaluation?</p> <p>Kron, <i>et al.</i> <i>Ann. Surg</i> 1985</p>	<ul style="list-style-type: none"> • 1973-1982 • Medical School • Residency 	<p>Compared level of a clinical performance and success of residents in one training program with information from initial application and interview. Can level of performance in residency be predicted from data in application?</p> <p>Can successful completion of residency program be predicted from objective and subjective data from medical school?</p>	Retrospective Cohort	62	<ul style="list-style-type: none"> • Medical school application info • Election to AOA • NBME scores • Class rank (honors in basic science and clinical subjects, letters of recommendation, scientific publication during medical school, research experience) • Residency interview 	<ul style="list-style-type: none"> • Rating by program director for year one residency level of clinical performance 	Discriminant function analysis	<ul style="list-style-type: none"> ▪ No correlation between any of the selection factors and resident's performance for the 42 who completed the program. ▪ Comparison of the 42 with 20 who were dismissed revealed AOA membership; high-class rank; clinical honors; and scientific publications during medical school predicted success with 89% accuracy. ▪ Personal interviews are not predictive of success, or performance.

SUMMARY OF INCLUDED STUDIES

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>First-Year Residents' Performances Compared with Their Medical School Class Ranks.</p> <p>Loftus <i>et al.</i> <i>Acad Med</i> 1992</p>	<ul style="list-style-type: none"> • Medical school • Residency 	<ul style="list-style-type: none"> ▪ Does student's class rank bear strong relationship to subsequent residency performance? ▪ What class rank system yields most sig. Correlation with postgraduate med. outcomes ▪ Is there a way to strengthen the relationship 	Retrospective cohort	<p>124 graduates with med school records</p> <p>102 for internship records</p>	<ul style="list-style-type: none"> • Preclinical GPA • Clerkship GPA • NBME I/NBME II • First year student ranking (Dean's letter category index) • Ranking with Criterion Ref. • Ranking with Norm Ref. • Honors Society Intern Selection Comm. 	Rating by supervisor for year one residency 9 areas of clinical performance	<p>Stepwise multiple regression</p> <p>Pearson's correlation</p>	<ul style="list-style-type: none"> ▪ Weighted combination of clinical performance measures bore strongest relationship to performance in residency. ▪ Low correlation of different ranking methods r (0.23–0.18) $P < 0.05$

SUMMARY OF INCLUDED STUDIES

(21)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>The relationship of academic measures in medical school to performance after graduation –</p> <p>Markert, <i>Acad Med</i> supp. 1993</p>	<ul style="list-style-type: none"> • Medical School • Internship (1980 - 1991) 	<p>Study 3 hypotheses: Measures of medical school academic performance will correlate significantly with postgraduate outcome. Relationship will be strongest for conceptually similar measures; Students categorized as high or low will be categorized similarly on post grad. outcome measures.</p>	<p>Retrospective cohort</p>	<p>947 (628=NBME II scores) (481=physician. Supervisor ratings)</p>	<ul style="list-style-type: none"> • NBME I, II • Preclinical GPA • Clerkship GPA 	<ul style="list-style-type: none"> • NBME III • Supervisor Rating for year one residency 	<ul style="list-style-type: none"> ▪ Pearson correlation ▪ Stepwise regression ▪ Factor analysis ▪ Chi-square 	<ul style="list-style-type: none"> ▪ The medical school variables correlated significantly with NBME part III scores and physician supervisor ratings. First 2 hypotheses are supported. ▪ Medical School academic achievement significantly related to clinical competency in residency.

SUMMARY OF INCLUDED STUDIES

(22)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
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<p>Measuring Outcomes of Undergraduate Medical Education: Residency Directors' Ratings of First-year Residents</p> <p>Paolo & Bonaminio <i>Acad Med</i> 2003</p>	<p>1998-2000</p> <ul style="list-style-type: none"> ▪ Medical School ▪ First-year Residents 	<p>To assess reliability and validity of a residency rating scale (Psychometric) and provide a method for gathering comparison data</p>	<p>Retrospective cohort</p>	<p>382</p>	<ul style="list-style-type: none"> ▪ Basic Science GPA ▪ Clinical GPA ▪ USMLE I ▪ USMLE II 	<ul style="list-style-type: none"> ▪ Supervisors ratings over 25 items based on the summative competency of the graduates using a Likert scale 	<ul style="list-style-type: none"> ▪ Structure of rating scale was assessed using principal components analysis with varimax rotation ▪ Correlation rating scale with undergraduate performance ▪ Analysis of variance for group difference ▪ Independent t-test 	<p>Five items:</p> <ul style="list-style-type: none"> ▪ Interpersonal communication ▪ Clinical skills ▪ Population based health care ▪ Record keeping skills ▪ Critical appraisal skills <p>Best explained the items and accounted for 86% of the variance Pearson correlations statistically significant ranging from 0.21 – 0.49 low to moderate relation between residency directors' ratings and UME performance measures of UME clinical GPA had the highest correlation with all five factors.</p>

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Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>The relationship between assessment measures of Newcastle Medical School (Australia) and performance ratings during internship.</p> <p>Pearson, Rolfe, & Henry <i>Med_Edu</i> 1998</p>	<ul style="list-style-type: none"> • Medical School • Internship 1991, 1992 	<p>Predictive value of academic performance in last 2 years of 5 year program for ratings during internship.</p>	<p>Retrospective Cohort</p>	<p>64 Graduates n=112 eligible</p>	<ul style="list-style-type: none"> • Professional skills long case in each department • Critical reasoning • Population medicine • Self-directed learning • Identification prevention and management of illness. 	<p>Supervisor rating for year one residency 13 competencies</p>	<p>ANOVA Linear regression</p>	<ul style="list-style-type: none"> • Significant positive correlations between mean ratings and examination scores from Domains 1,3,5. • Professional skills; identification, prevention management of illness; self-directed learning. • Best predictor of intern ratings was identified, prevention and management of illness $r = 0.28$ $P < 0.01$

SUMMARY OF INCLUDED STUDIES

(24)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>An analytical study of North Carolina General Practice</p> <p>Peterson <i>et al.</i> <i>Med Edu</i> 1956</p>	<p>1956</p> <ul style="list-style-type: none"> • Medical School • General Practice 	<p>To determine relationship between medical school academic marks and quality of practice in North Carolina</p>	<p>Survey</p>	<p>94 GPs</p>	<p>Academic marks in clerkship</p>	<ul style="list-style-type: none"> ▪ Quality of practice ▪ Career performance measures - Observation by internist of subject's clinical history, physical examination, use of laboratory aids, use of therapeutic measures, preventive medicine, and clinical records. Observer made composite ratings on a predetermined scale which gave preponderant weight to the quality of the subject's clinical history and physical examination. 	<p>Pearson correlation</p>	<p>Relationship between academic and career performance – slight, positive significance for younger doctors; no significance for older doctors.</p>

SUMMARY OF INCLUDED STUDIES

(25)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Measurement of Physician Performance Price, <i>et al. Med Edu</i> 1964	1964 • Medical School • General Practice	To determine relationship between medical school GPA and academic and practice performance	Survey	215 GPs and 292 specialists	Medical school GPA's ▪ First two years ▪ Last two years	Career performance measures – About 80 measures obtained from interviews, records, and colleagues' opinions, for example, number of journals to which respondent's subscribed, peer nominations for outstanding performance, hospital recognition, and publications; composite performance clusters developed with factor analytic techniques.	▪ Pearson correlation ▪ Factor analysis	Performance – None; medical school grade point average (GPA), a factor almost completely independent of all factors having to do with professional performance

SUMMARY OF INCLUDED STUDIES

(26)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Traditional finals and OSCEs in Predicting Consultant and Self-reported Clinical Skills of PRHOs Probert, <i>et al. Med Edu</i> 2003	Medical School and PRHO 1999	To determine the relationships between medical school achievements and clinical or academic performance of residents in physical medicine and rehabilitation, performance on board examination and entry into academic practice.	Prospective cohort	20 PRHOs	<ul style="list-style-type: none"> ▪ OSCE ▪ Long case examination 	<ul style="list-style-type: none"> ▪ Self assessment of clinical competencies ▪ Supervisor assessment of clinical competencies 	<ul style="list-style-type: none"> ▪ Z score ▪ Pearson Correlation ▪ Kendall’s rank correlations ▪ Multiple variable logistic regression O.R. > 1 indicates better performance on examination; is associated with increase probability of being classified as better doctor 	<ul style="list-style-type: none"> ▪ No correlation between PRHOs self reported performance and consultant reported performance ▪ Traditional finals was inversely associated with consultant assessment. Better performing students were not rated as better doctors in surgery but not in medicine ▪ OSCE showed positive associations with consultant ratings

SUMMARY OF INCLUDED STUDIES

(27)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>A Comparison of the Modified Essay Question and Multiple Choice Question Formats: Their Relationship to Clinical Performance</p> <p>Rabinowitz & Hojat. <i>Fam Med</i>, 1989.</p>	<p>1976 – 1985, Jefferson Medical College</p>	<p>Determine the relation between (1) MCQ examination in third year clerkship (2) Modified essay question final examination in family medicine (3) clinical performance in post-graduate training</p>	<p>Retrospective Cohort Study</p>	<p>1458 graduates</p>	<ul style="list-style-type: none"> ▪ MCQ 3rd year clerkship. ▪ Modified essay examination in family medicine clerkship 	<ul style="list-style-type: none"> ▪ NBME I, II, III ▪ Supervisor ratings in residency 	<ul style="list-style-type: none"> ▪ Pearson correlation and regression analysis 	<ul style="list-style-type: none"> ▪ Grades on MCQ examination in internal medicine clerkship consistently yielded the higher correlation with NBME scores I, II, III (r=0.59, 0.64 and 0.49). Modified essay in family medicine had the lowest correlation with NBME I, II, III (r=0.37, 0.37, 0.38). ▪ Correlations of clerkship examination scores with post-graduate rating of competencies. <ul style="list-style-type: none"> ▪ Medical knowledge highest: internal medicine clerkship 0.23, lowest: pediatrics 0.12 ▪ Data gathering highest: family medicine 0.19, lowest: Ob/Gyn 0.15. ▪ Clinical judgment highest: family medicine 0.20, lowest: pediatrics 0.13 ▪ Professional attitudes, highest: 0.17, lowest: pediatric 11

SUMMARY OF INCLUDED STUDIES

(28)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>The prediction of Medical Intern Performance</p> <p>Richards, Taylor & Price <i>Appl Psychol</i> 1962</p>	<p>1955-1958</p> <ul style="list-style-type: none"> • Medical School • Internship 	<p>To determine the relationship between medical school and GPA internship performance</p>	<p>Survey</p>	<p>139 Interns</p>	<p>GPA Years 1, 2, 3</p>	<ul style="list-style-type: none"> ▪ Supervisor ratings of internship performance ▪ Career performance measures – Evaluation of internship performance by hospital official; judges applied a rating scale to the letters of evaluation. An adjusted rating was also obtained by modifying the above unadjusted rating by an index of hospital quality. 	<p>Pearson correlation coefficient</p>	<p>Relationship between academic and career performance – Slight, positive significant correlations of .21 and .24 between first- and second-year grades, respectively, and adjusted rating; positive, significant correlation of .33 and .45 between third-year grades and unadjusted and adjusted ratings, respectively.</p>

SUMMARY OF INCLUDED STUDIES

(29)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Relationship between past academic performance and results of specialty in-training examinations</p> <p>Ronai, Golmon, Shanks, Schafer & Brunner. <i>J Med Educ</i>, 1984</p>	<ul style="list-style-type: none"> • 1966 – 1981 	<p>What is the relationship between College grades, medical school performance and the results of specialty in-training examination of residents in Anesthesia & Orthopedics.</p>	<p>Retrospective Cohort Study</p>	<p>63 graduates of North Western Univ</p>	<ul style="list-style-type: none"> ▪ College Grade GPA ▪ MCAT Scores ▪ NBME I ▪ NBMEII 	<ul style="list-style-type: none"> ▪ Scores on the final assessment of their residency in-training examination in Anesthesia & Orthopedics 	<ul style="list-style-type: none"> ▪ T-test ▪ Pearson correlation ▪ Multiple linear regression for prediction 	<ul style="list-style-type: none"> ▪ No significant difference between the GPA, MCAT scores and NBME I & II between the two groups. ▪ Multiple linear regression analysis with stepwise forward inclusion. Best predictor of the anesthesia final in-training examination score was MCAT verbal ability 42%. For Orthopedic scores, ▪ GPA-non science inclusion of all variables accounted for 40% of the variance for both groups. GPA non-science negative correlation. ▪ NBME I and NBME II minimal effect in predicting in-training examination scores in anesthesia while significant information to the predictors of examination scores in orthopedics were found.

SUMMARY OF INCLUDED STUDIES

(30)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Validity studies using standardized-patient examinations: standardized patient potpourri Rutala, <i>et al.</i> <i>Acad Med</i> supp. 1992	1989-1990 •	To assess whether OSCE with standardized patients could predict performance during residency	Retrospective	76 students	OSCE – Standardized Patients: ▪ Interpersonal skills ▪ Database development ▪ Decision making	▪ Residency directors questionnaire and rating	Pearson correlation coefficient	Correlation of OSCE with residency directors rating: ▪ Interpersonal skills - .42 ▪ Database development - .28 ▪ Decision making - .28 OSCE with SPs can measure what residency directors look for particularly in the domain of interpersonal skills.

SUMMARY OF INCLUDED STUDIES

(31)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Correlations between Graduates Performances as First Year Residents and Their Performances as Medical Students.</p> <p>Smith, <i>Acad Med</i> 1993</p>	<ul style="list-style-type: none"> • Medical School • Internship 1989 - 1991 	<p>Examine relationship (correlation) between performance in internship and Med School performance, on a clinical skill exam</p>	<p>Retrospective Cohort</p>	<p>203 Graduates of Brown University</p>	<ul style="list-style-type: none"> ▪ Objective Clinical Exam in Senior Year (OSCE) ▪ Honors and Failing Grades in Preclinical Clerkship ▪ Clinical Electives 	<p>Supervisor Rating for year one residency</p>	<p>Pearson correlation coefficients</p>	<ul style="list-style-type: none"> • Data collection score on the CSE correlated best with internship performance. $r = 0.273$ • Correlations for clinical net score, number of honors grades in clinical electives, and interpersonal skills score closely clustered behind data collection score. • Correlations for number of honor grades in preclinical courses and scores on NBME I and II was zero.

SUMMARY OF INCLUDED STUDIES

(32)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
NBME Examination Part I as Predictor of Clinical and ABIM Certifying Examination Performances Sosenko, Stekel, Soto & Gelbard. <i>J Gen Int Med</i> , 1993	1980 – 1988 Jackson Memorial Hospital	Whether scores from NBME I are predictive of competence in internal medicine as assessed by clinical performance ratings and American Board of Internal Medicine	Retrospective Cohort Study	117 internal medicine residents	<ul style="list-style-type: none"> ▪ NBME I 	<ul style="list-style-type: none"> ▪ American Board of Internal Medicine Scores ▪ Supervisors rating of clinical competency during residency 	<ul style="list-style-type: none"> ▪ Pearson correlation 	<ul style="list-style-type: none"> ▪ High correlation between ABIME and NBME I (r = 0.57) ▪ Relation between clinical evaluations and the NBME I were considerably weaker (r=0.27)

SUMMARY OF INCLUDED STUDIES

(33)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Association between licensure examination scores and practice in primary care. Tamblyn, et al. <i>J Am Med Assoc</i> 2002	1990-1993 - practice	To determine a sustained relationship between certification exam scores and practice performance. If licensing exams taken at end of medical school are predictive of future practice in primary care.	Retrospective cohort Cohort Outcome variables: 5 annual measures	912 FPs	<ul style="list-style-type: none"> ▪ Final year MD Exam Scores and subscores • Licensing examinations 	Practice Outcomes in Primary Care	<ul style="list-style-type: none"> ▪ Poisson regression ▪ Multiple linear regression 	<ul style="list-style-type: none"> • Relationships between certification exams were sustained through first 4-7 years of practice. • Exams taken in final year of medical school were significant predictors of practice performance.

Continued Tamblyn, et al. <i>J Am Med Assoc</i> 2002	Outcomes											
	Preventive Care Mammography Screening Rate		Coordination of Care Continuity of Care, % of visits		Resource Use Consultation Rate		Acute & Chronic Disease Management Symptom-relief Prescribing Rate Among Elderly Patients		Disease-specific Prescription Rate Minus Symptom-Relief Prescription Rate		Contraindicated Prescribing Among Elderly Patients	
	β (95% CI)	P Value	β (95% CI)	P Value	β (95% CI)	P Value	β (95% CI)	P Value	β (95% CI)	P Value	β (95% CI)	P Value
Predictors												
Overall score	16.81 (8.7 to 24.9)	< .001	0.2 (-0.4 to 0.8)	.52	4.93 (2.1 to 7.8)	< .001	-7.15 (-15.0 to 1.0)	.08	4.83 (0.9 to 8.8)	.01	0.93 (0.82 to 1.05)	.21
Prevention subscore	8.10 (-1.0 to 17.2)	.08										
Clinical Assessment subscore	11.54 (5.5 to 17.6)	.002										
Management subscore			0.01 (-0.6 to 0.6)	.96			-7.0 (-14.0 to 2.2)	.15	3.0 (1.0 to 6.9)	.15	0.91 (0.80 to 1.03)	.13
Diagnosis subscore							-5.1 (-12.0 to 2.3)	.18	3.80 (0.3 to 7.3)	.03	0.97 (0.86 to 1.10)	.67
Drug Knowledge subscore							-6.99 (-14.0 to 0.4)	.06	3.5 (0 to 7.1)	.05	0.88 (0.77 to 1.0)	.05

SUMMARY OF INCLUDED STUDIES

(34)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Clinical Performance - based test sensitivity and specificity in predicting first year residency performance.</p> <p><i>Vu, et al. Acad Med</i> supp. 1993</p>	<ul style="list-style-type: none"> • Medical School (1987, 88, 90) • Internship 	<p>To assess the utility of the post clerkship exam in predicting 1st year residency performance :</p> <p>1) Students who would receive high 2) Students who would receive low.</p>	Retrospective cohort	202 reduced to 133	Clinical Competence (Post-clerkship score)	Supervisor rating for year one residency		<ul style="list-style-type: none"> • Supervisors are reluctant to give low ratings. • PCX = "Very sensitive"; Correctly identified 91% of students who received high ratings. • Much lower specificity for <u>low</u> ratings received.

SUMMARY OF INCLUDED STUDIES

(35)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Six years of comprehensive, clinical, performance-based assessment using standardized patients at the Southern Illinois University School of Medicine</p> <p><i>Vu, et al. Acad Med 1992</i></p>	<p>1986-1991</p> <ul style="list-style-type: none"> • 	<p>To determine the validity and reliability of a post-clerkship clinical performance examination</p>	<p>Retrospective</p>	<p>405 students</p>	<ul style="list-style-type: none"> ▪ scores on the PCX 	<ul style="list-style-type: none"> ▪ NBME I ▪ NBME II ▪ Clerkship scores <p>First year resident supervisor rating</p>	<p>Pearson correlation coefficient</p>	<ul style="list-style-type: none"> ▪ Clerkship rating $r = .36$ to $.62$ ▪ First year residency supervisor $r = .16$ to $.43$, mean $.32$ ▪ NBME I $r = .20$ to $.65$, mean $.42$ ▪ NBME II $r = 0.30$ to $.56$, mean $.40$ <p>All correlations were positive and significant, but they were relatively small, suggesting that the measures may assess different aspects of performance with small overlapping.</p>

SUMMARY OF INCLUDED STUDIES

(36)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
Comprehensive undergraduate medical assessments improve prediction of clinical performance Wilkinson & Frampton <i>Med Edu</i> 2004	2002 - 2003	<ul style="list-style-type: none"> ▪ High correlation using the new assessment method during the intern year ▪ OSCE has a higher predictive validity ▪ Combining the results is better than relying on any single method 	Prospective before and after cohort study	137 year 5 medical students followed into their trainee intern year	<ul style="list-style-type: none"> ▪ Essay exam ▪ MCQ ▪ Modified essay ▪ OSCE 	<ul style="list-style-type: none"> ▪ Aggregated global ratings by senior directors, junior doctors and nurses evaluating global clinical skills, global humanistic skills and total global score and comprehensive structured assessment ▪ Comparison with the old written examination 	<ul style="list-style-type: none"> ▪ Pearson's correlation ▪ Multiple regression and partial correlation coefficient 	Global total correlations: <ul style="list-style-type: none"> ▪ Old exam: written $r = .17$ ▪ New exam: written $r = .54$, OSCE $r = .59$ & combined $r = .60$

SUMMARY OF INCLUDED STUDIES

(37)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Medical School Achievements as Predictors of Residency Performance.</p> <p>Yindra, Rosenfeld & Donnelly <i>J Med Edu</i> 1998</p>	<p>1983 and 1984</p> <ul style="list-style-type: none"> ▪ Medical School ▪ Internship 	<p>Relationships between academic achievement in med school : performance in internship, evaluated by program directors</p>	<p>Retrospective Cohort</p>	<p>119, 158</p>	<ul style="list-style-type: none"> ▪ Medical school performance ▪ Average course grades years 1, 2, 3, 4 ▪ AOA ▪ Dean's Letter ranking ▪ NBME I ▪ NBME II 	<ul style="list-style-type: none"> ▪ Performance in first year residency 	<ul style="list-style-type: none"> ▪ Multiple regression ▪ Factor analysis ▪ t-tests ▪ ANOVA ▪ Pearson correlation 	<ul style="list-style-type: none"> ▪ Low correlation highest NBME Part II $r = 0.37$, but statistically significant relationships between measures of medical school performance and program directors' ratings. ▪ Confounding effects of specialty on resident's ratings.

SUMMARY OF INCLUDED STUDIES

(38)

Citation	Time of Measurement	Research Question/ Purpose of Study	Design	Sample Size	Variables		Statistical Analysis Used	Results/Findings
					Predictors	Outcome		
<p>Board Certification: Associations with Physicians' Demographics and Performances during Medical School and Residency</p> <p>Xu, Veloski & Hojat. <i>Acad Med</i>, 1988</p>	<p>1976 - 1985</p> <ul style="list-style-type: none"> • Jefferson Medical School • Specialty Board Certification 	<p>Do physicians who are board certified have records of higher academic credentials during medical school and in residency.</p> <p>Can academic credentials during medical school and residency predict future board-certification status</p> <p>What is the effect of age, sex, ethnicity on both questions</p>	<p>Prospective, Longitudinal study</p>	<p>1186</p>	<ul style="list-style-type: none"> ▪ Grades of basic medical sciences (BMS). Year 1 & 2 ▪ Grades of clinical sciences – Year 3 ▪ GPAs, BMS and clinical sciences ▪ NBME I & II 	<ul style="list-style-type: none"> ▪ Supervisor ratings (Likert Scale) (PGY1) 33 statement 3 factors (data gathering and processing skills 60% of covariance). (interpersonal and attitudinal 5%), socioeconomic aspects of patient care (4%). Composite score of the three areas of postgraduate competence ▪ Self reported practice specialty in family medicine, internal medicine ▪ Board certification status 	<ul style="list-style-type: none"> ▪ Chi-Square tests for board certification and sex, age, race ▪ T-test, mean differences between board certified and those not certified ▪ Multiple linear regression models for correlation NBME and postgraduate clinical competence 	<ul style="list-style-type: none"> ▪ Data on 95% of graduates (1,186). 1068 were board certified 90% ▪ Rate of certification: 82% in surgery, 92% family practice, 94% internal medicine (x2 = 37.96,P<.001) ▪ Differences in Mean Scores of medical schools scores: GPA “BMS”, GPA “CS”, NBME I, NBME II among certified and not certified physicians. Certified had higher academic credentials. ▪ Similar certification rates for men and women ▪ Older graduates were less likely to be certified ▪ Much lower proportion of underrepresented physicians achieved certification ▪ NBME Score II better predictor than NBME I with ABM in medicine and surgery. In family medicine, neither NBME I or II was a significant predictor

Meta-Analysis of 19 Included Studies (Figs 2 – 11)

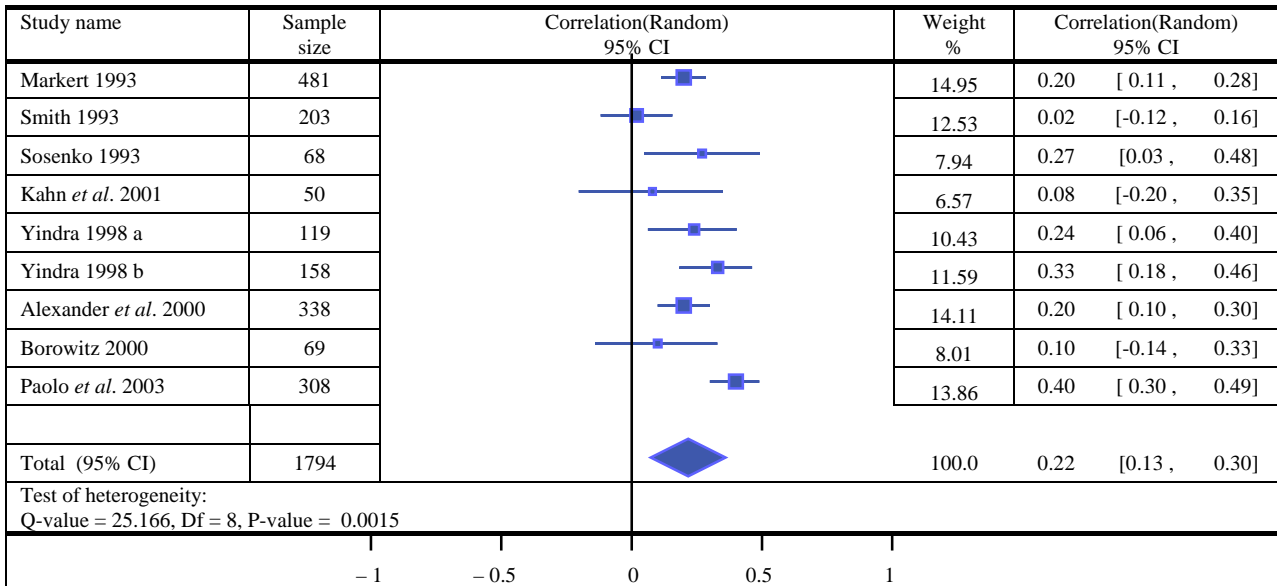


Fig 2: Correlation Coefficient between NBME I (predictor) and Supervisor rating (outcome)

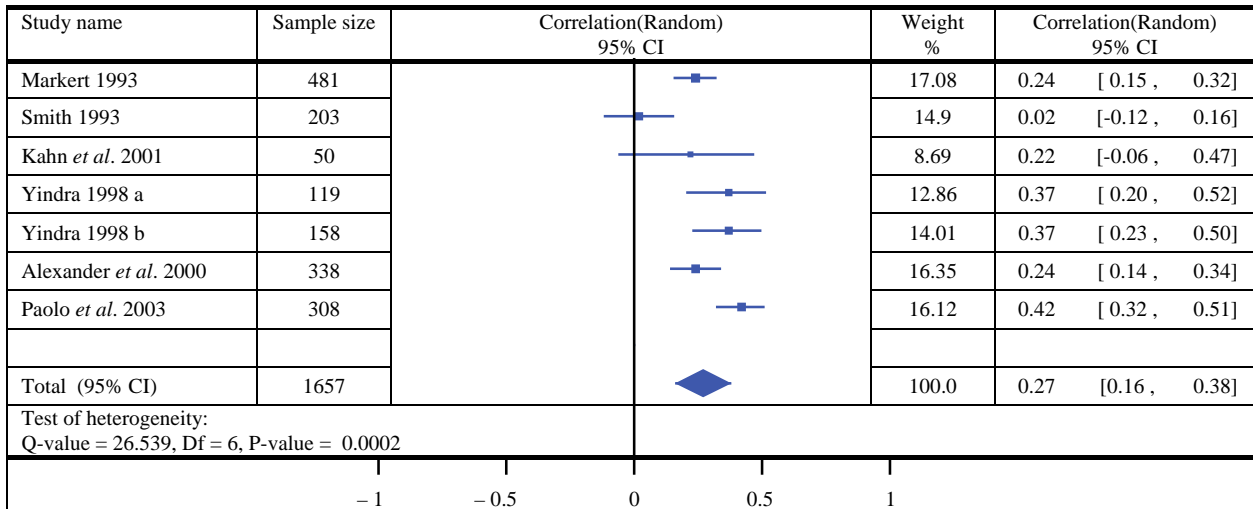


Fig 3: Correlation Coefficient between NBME II (predictor) and Supervisor rating (outcome)

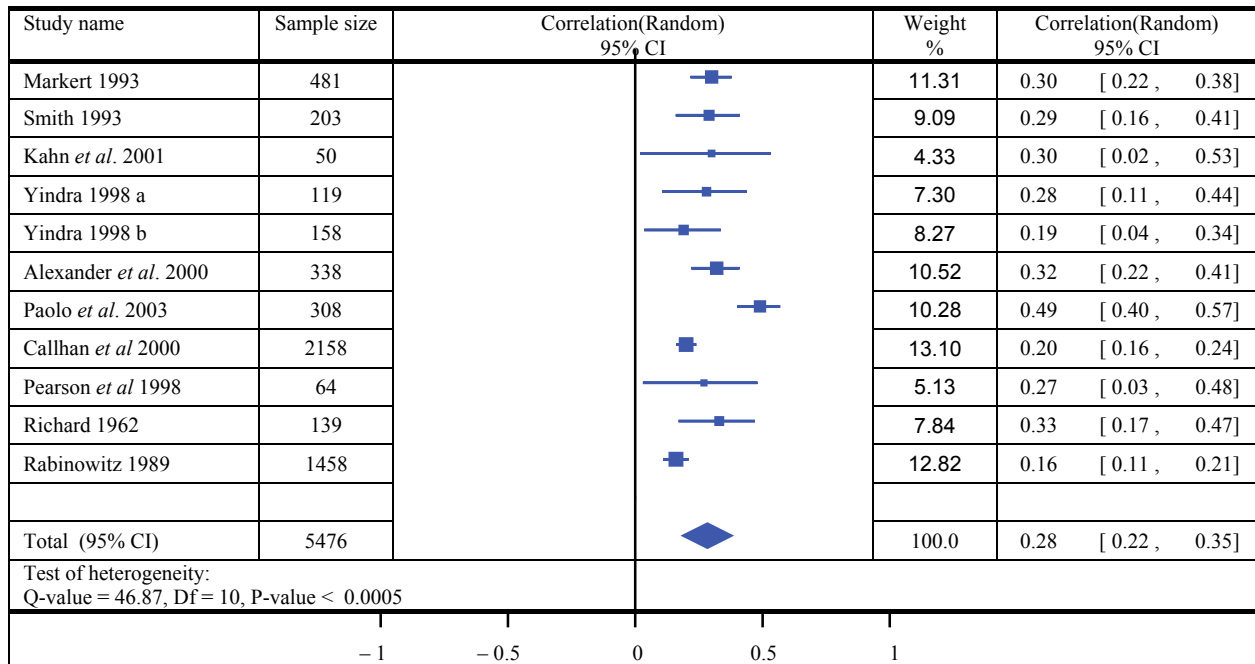


Fig 4: Correlation Coefficient between Clerkship GPA (predictor) and Supervisor rating (outcome)

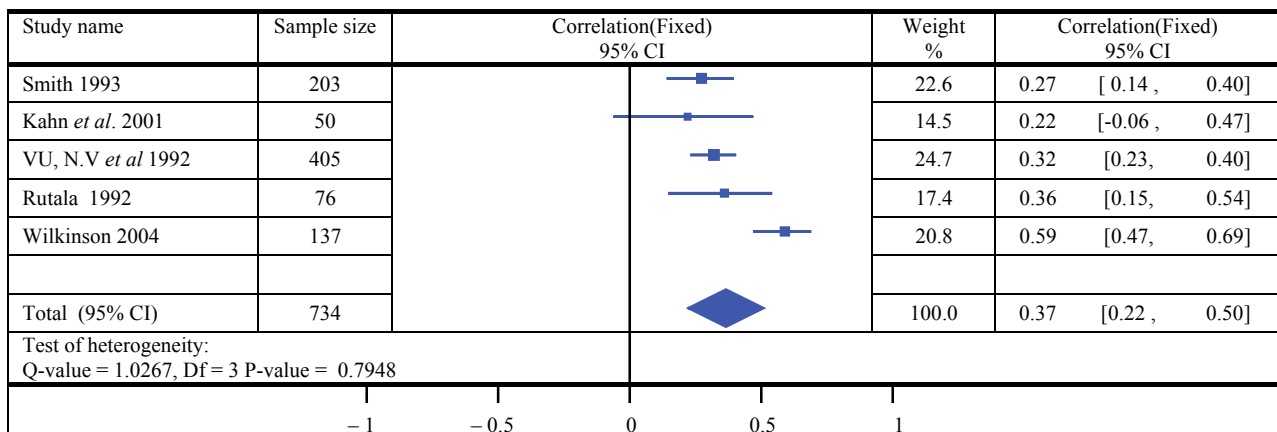


Fig 5: Correlation Coefficient between OSCE (predictor) and Supervisor rating (outcome)

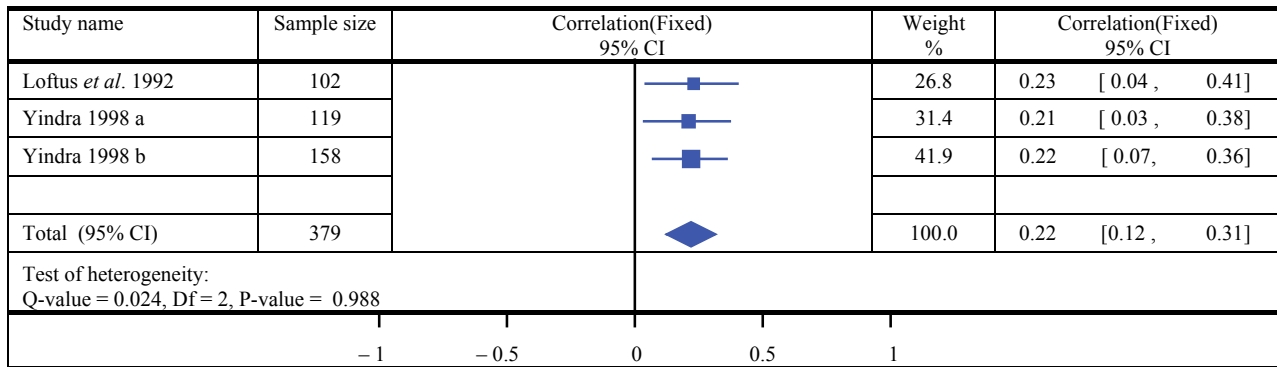


Fig 6: Correlation Coefficient between Ranking (Dean’s letter) (predictor) and Supervisor rating (outcome)

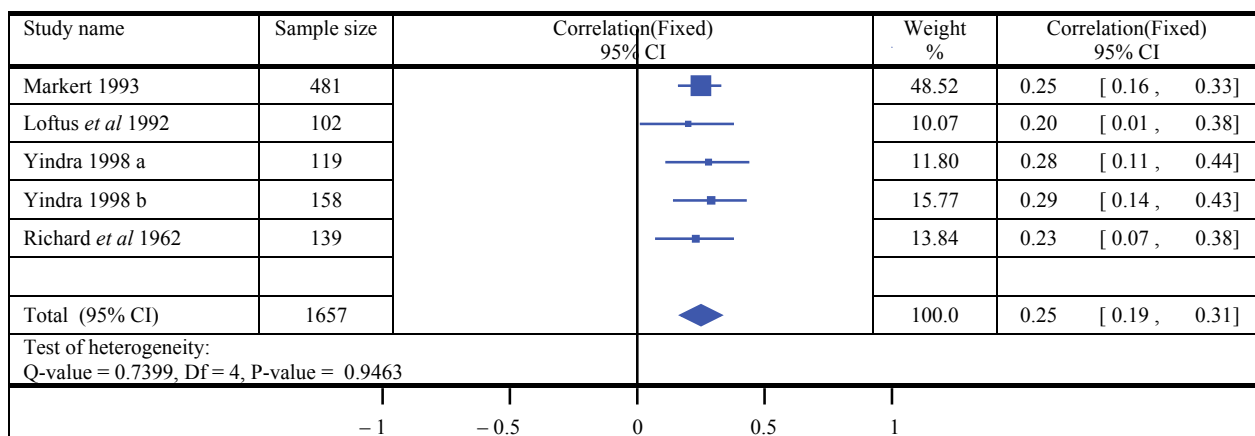


Fig 7: Correlation Coefficient between Pre-clinical GPA (predictor) and Supervisor rating (outcome)

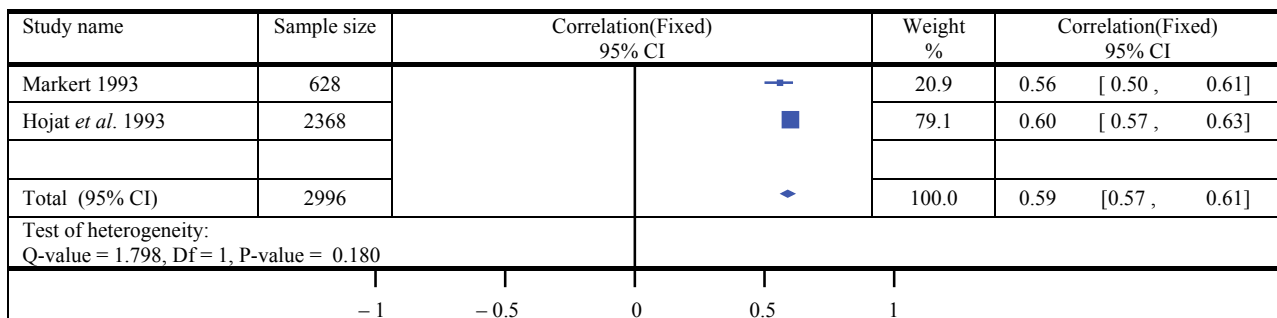


Fig 8: Correlation Coefficient between NBME I (predictor) and NBME III (outcome)

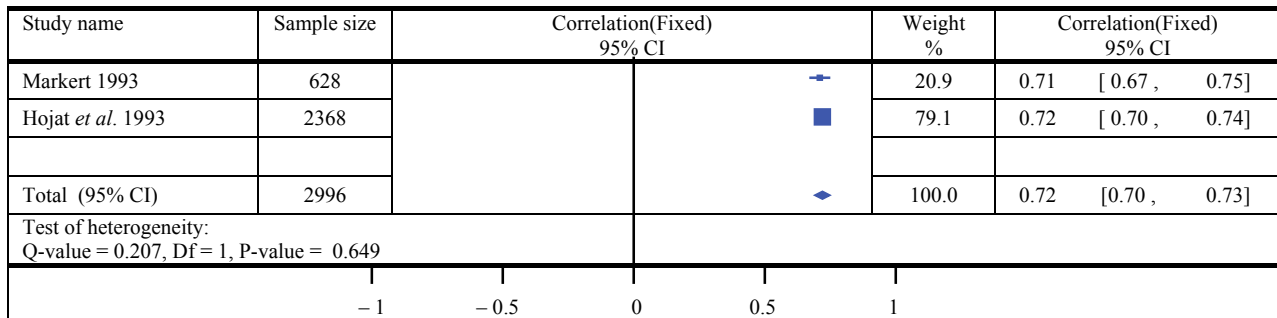
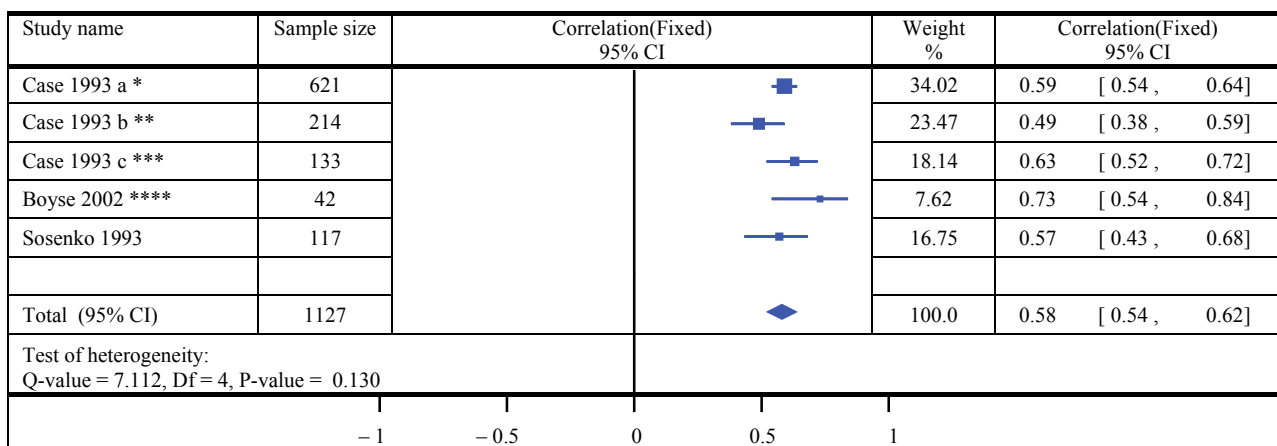
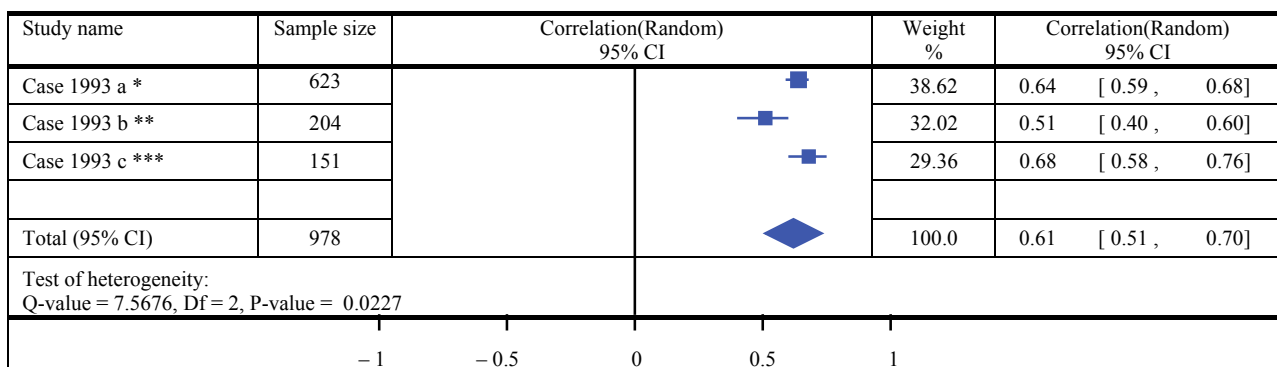


Fig 9: Correlation Coefficient between NBME II (predictor) and NBME III (outcome)



* American Board of Orthopedic Surgery; ** American Board of Dermatology; *** American Board of Preventive Medicine; **** American Board of Radiology

Fig 10: Correlation Coefficient between NBME I (predictor) and American Board of Specialty Examination Scores (outcome)



* American Board of Orthopedic Surgery; ** American Board of Dermatology; *** American Board of Preventive Medicine

Fig 11: Correlation Coefficient between NBME II (predictor) and American Board of Specialty Examination