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16. Abstract

Continuing medical education (CME) serves to maintain or increase the knowledge, interpretive proficiencies, and technical skills that a physician uses in his/her practice of medicine. Resulting improvement in professional performance is frequently difficult to measure, particularly in aerospace medicine, but CME is required for relicensure and/or for medical society membership in 70% of states. The Civil Aeromedical Institute first received American Medical Association approval for Category I CME credit for attendance at FAA seminars in January 1973. We began preparing 21-item annual performance reports for each aviation medical examiner (AME) in 1979 to attempt to isolate the causes of, and to reduce, computer rejection of about one-fourth of all medical certification input because of omissions or procedural errors. There was little improvement in error rate through 1982. We are presently conducting special sessions and open-book tests for new AME's, lecturing to military flight surgeons, and encouraging Regional Flight Surgeons to review reports of physical examinations from new and frequent-error AME's. We conducted a special analysis of 1983 AME performance data to determine the relationships between errors and omissions and number of exams performed, recency and frequency of seminar attendance, and pilot or military flight surgeon experience. Errors were significantly reduced with recent and frequent seminar attendance, larger volume of exams, and pilot and military flight surgeon experience.

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EFFORTS TO IMPROVE AVIATION MEDICAL EXAMINER PERFORMANCE THROUGH CONTINUING MEDICAL EDUCATION AND ANNUAL PERFORMANCE REPORTS

INTRODUCTION

Louis H. Bauer, M.D., the first Medical Director in the Aeronautics Branch, U.S. Department of Commerce, conducted 12 training conferences for aviation medical examiners (AME's) in 1929 and 1930. No further courses were held until the present seminar program was begun in December 1960. To date, 279 3-day and 5-day seminars have been held with a total attendance of about 31,500.

The Federal Aviation Administration (FAA) AME seminars conducted by the Civil Aeromedical Institute were first approved by the American Medical Association for Category I continuing medical education (CME) credit in January 1973 and are currently approved until 1988. The American Academy of Family Physicians and the American Osteopathic Association also regularly grant CME credit for attendance.

CME is composed of any education or training that serves to maintain, develop, or increase the knowledge, interpretive and reasoning proficiencies, applicable technical skills, professional performance standards, or ability for interpersonal relationships that a physician uses to provide the services needed by patients or the public. The end result is usually improved patient care outcome. While 70% of states require CME for reregistration of a license to practice medicine and/or for continuing membership in state medical societies, studies rarely document any demonstrated improvement in patient outcomes.

We have long been concerned about but usually unaware of the thoroughness of airman physical examinations by individual AME's. Those found to be performing cursory exams are usually not reappointed for the next year, but evidence is difficult to obtain. Detectable but unreported significant physical defects are rarely found in pilots killed in aircraft accidents. Also, certificates are rarely issued to airmen obviously not qualified.

Year after year, 50%-52% of applications for airman medical certificates entered in the computer are rejected for omission of information, failure to meet the physical standards, or significant changes since the last exams. About half of these are administrative errors, which include omissions and procedural errors.

We have used Federal Air Surgeon newsletter articles and seminar lectures for several years to attempt to reduce these costly mistakes, but to no avail. In 1979, we began preparing and sending to each AME a report of the frequency and percentage of his/her errors in 21 categories. These are reviewed by Regional Flight Surgeons, and AME's with poor records are, we hope, contacted or even dropped. Again, there was no observed benefit. In fact, the error rate for military flight surgeons (who usually attend no seminars) increased from 35.3% in 1981 to about 41% in 1982 and 1983 despite lectures at Army and Air Force operational aeromedical problems courses.

The 1983 consolidated performance summary report for active duty military, Reserve, and National Guard flight surgeon units is shown in Table I. The error rate is calculated by dividing the number of errors and omissions that cause the computer to reject an application by the number of reports of exams received. Granted, some reports may contain multiple errors and others none, so that the true rate of rejected documents is not obtained. However, the data are valid for making comparisons and for determining trends and the incidence of errors serious enough to result in rejection of the application by the computer. Few military flight surgeons are contacted regarding individual applications with errors and omissions because of our insufficient staff and assumed good health of active military pilots; many say they have never seen a performance report.

TABLE I. PERFORMANCE SUMMARY REPORT: MILITARY FLIGHT SURGEONS, 1983.

Total exams performed: 47,756

Errors Identified	Frequency	Total Exam Rate (%)
A - Computer-issued corrected certificate	1,408	2.9
B - Corrected certificate issued by certification personnel	190	0.3
D - Intraocular tension, item 52, blank	4,491	9.4
E - Field of vision, item 54, blank	483	1.0
F - Color vision, item 53, blank	495	1.0
G - All or part of medical history, item 21, blank	1,777	3.7
H - Abnormalities, items 25-48,. blank	163	0.3
I - AME not authorized first class	191	0.3
J - Distant vision, item 50, blank	654	1.3
K - Near vision blank	816	1.7
L - Distant or near vision exceeds standards--certificate issued--no waiver held	1,787	3.7
M - Class of certificate issued higher than applied for	744	1.5
N - Student/medical combination issued to airman less than 16 years of age	8	
O - Blood pressure, item 56, exceeds standards or omitted--certificate issued	1,971	4.1
P - Pulse, item 57, exceeds standards or omitted--certificate issued	2,057	4.3
Q - Certificate issued of higher class than waiver issued class	32	
R - Medication field, item 15, blank	677	1.4
S - Hearing field, item 49, blank and no audiogram given	400	0.8
T - Urinalysis field, item 58, blank	1,291	2.7
V - AME error letter sent to AME	5	
W - Certificate issued to airman obviously not qualified	1	

Recently, we added a special Thursday evening session (before the 3-day Friday-Sunday seminars) with a discussion of administrative procedures and an open-book test for newly designated physicians. We now give certification update lectures to all *AME's* at seminars rather than offer optional certification clinics. One Regional Flight Surgeon has new and high-error *AME's* send 10 reports of physical exams to his office for grading. International *AME's* must now attend a seminar before designation. Consideration has been given to all *AME's* attending before .appointment rather than within 1 year after and every 5 years thereafter, as presently required. Suggestions have been made that military personnel also be required to attend seminars. Revision of the application, history, and physical examination form (FAA Form 8500-8) to improve clarity has been discussed.

METHODS

In order to obtain information about the value of (i) repeated seminar attendance, (ii) an AME:airman ratio of about 1:100 for economy & for maintaining familiarity with procedures,* (iii) experience as a military flight surgeon (19% have), and (iv) pilot status (about 48% are), we analyzed the 1983 certification data for omission and certification error frequencies and rates for these status variables. We also examined errors for the past year to see if any early effects were evident from the Thursday evening sessions, certification lecture instead of clinic, or review of reports by one Regional Flight Surgeon.

Error codes D, E, F, G, H, J, K, R, S, and T are considered to be omissions and primarily clerical errors. Error codes A, B, I, L, M, N, O, P, Q, V, and W are considered certification errors.

RESULTS AND DISCUSSION

The annual AME status vs. error report shows significant (at 0.05 by the critical ratio rate test) reduction in omitted items and certification errors with (i) seminar attendance the previous year and, with one exception, (ii) more seminars attended (Fig. 1), (iii) increased volume of exams per year (Fig. 2), (iv) pilot experience, and (v) military flight surgeon experience (Fig. 3).

We did not determine if recency of exposure or program content was responsible for the improved performance with seminar attendance within the past year. Error rates, by Region, are not included in this report as originally planned but will be addressed in an analysis of errors and omissions for 1984.

CONCLUSIONS

Despite the high computer reject rate, it appears that the *AME* designation and training policies and practices are valid and should be continued.

*The present AME:active-airman ratio varies from 1:50 to 1:150 among the nine Regions with an overall ratio of 1:86.

Increased attention needs to be given to decreasing the ratio of AME's to active airmen in some Regions for improved economy and performance, requiring attendance at a seminar before appointment, Regional medical officers reviewing the reports of physical examinations performed by new and high-error *AME's,* training AME office assistants in metropolitan areas, providing better orientation (and perhaps required training) for military flight surgeon unit personnel, and getting poor Performance *summary* reports past NCOIC's and actually into the hands of military flight surgeons.

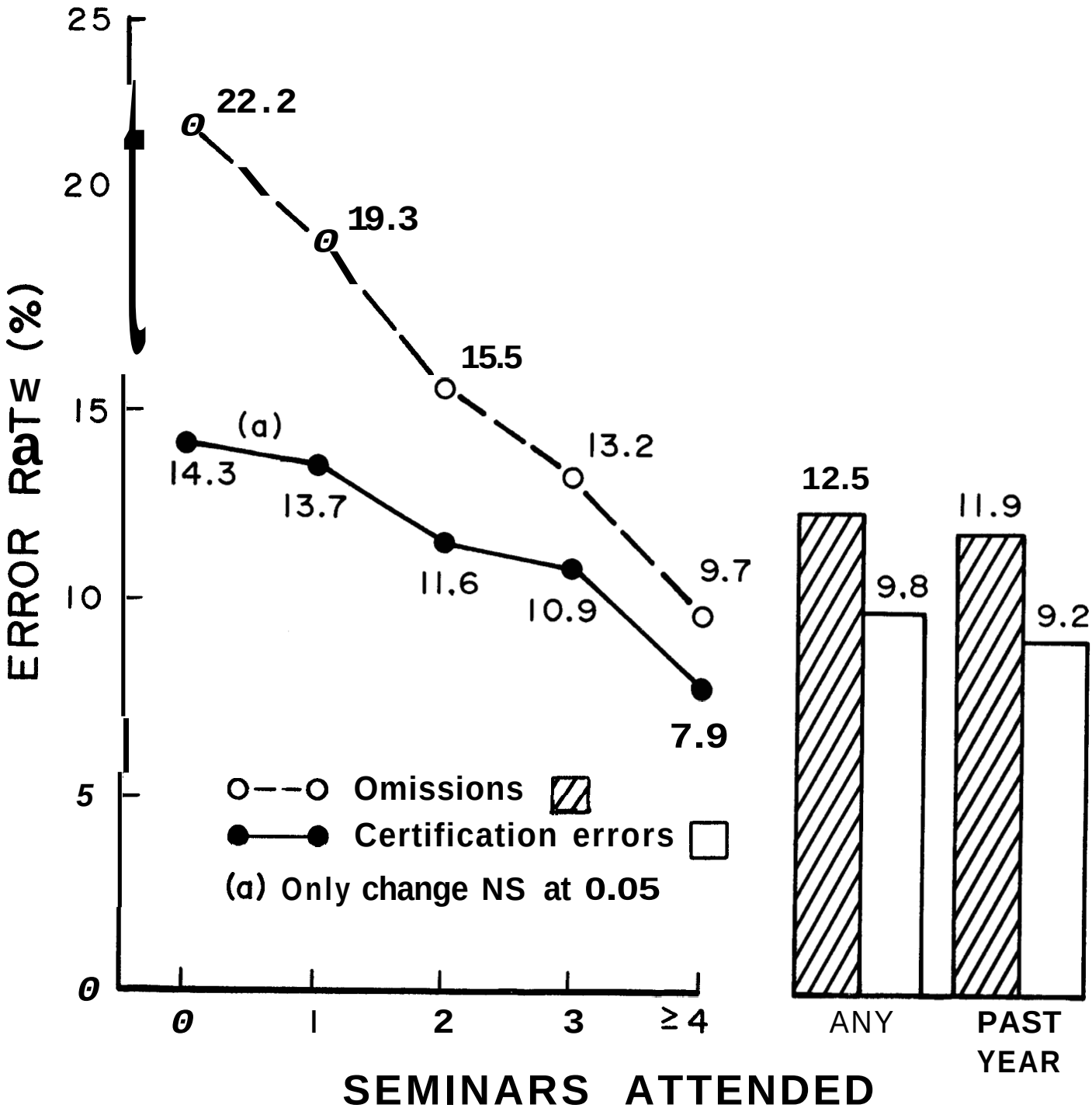

Fig. 1. **Effects of the number of aviation medical examiner seminars attended and recency of attendance on the rates of certification errors and omission of information.**

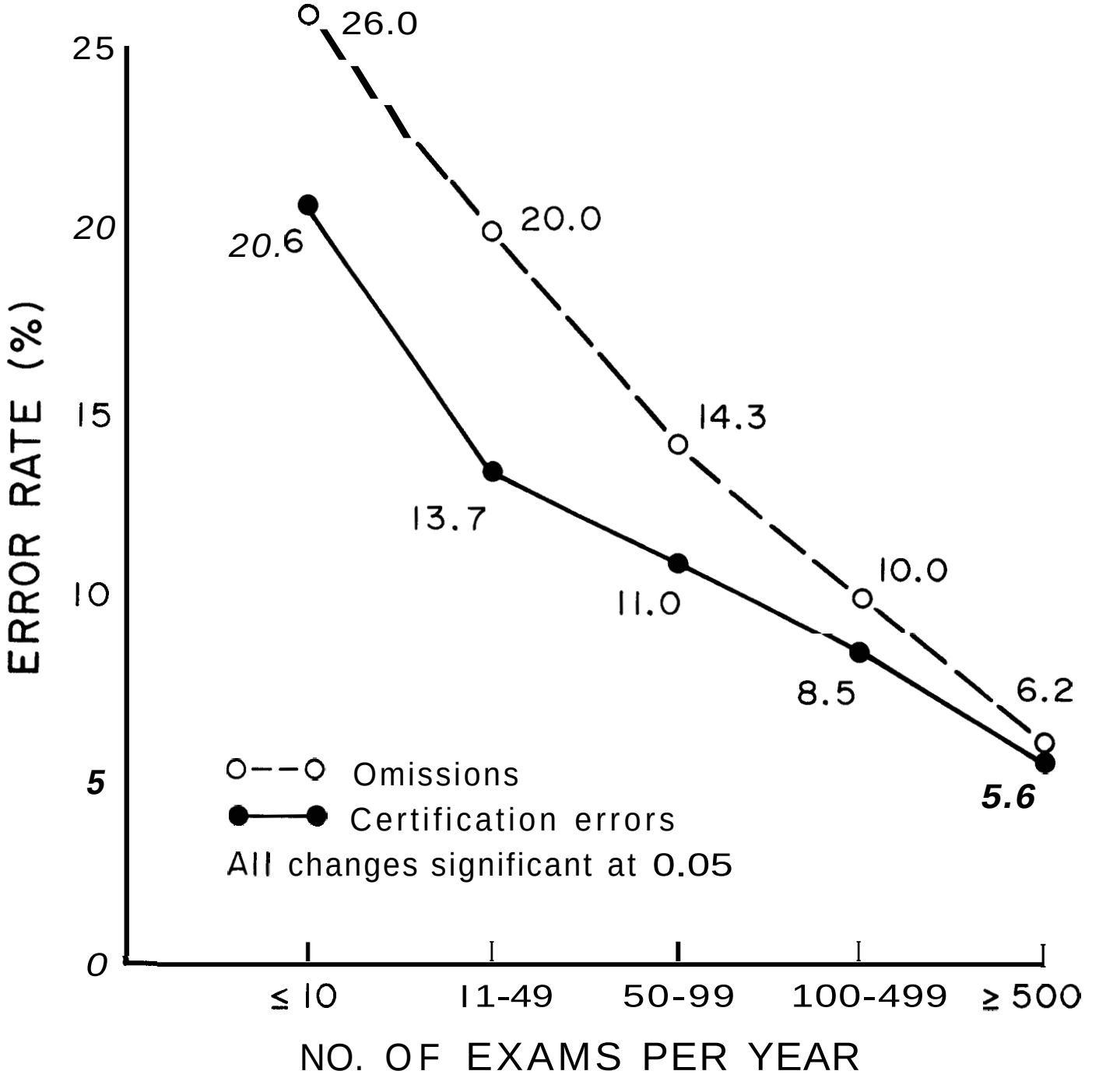

Fig. 2. Effects of the number of airman physical examinations performed each year on error rates.

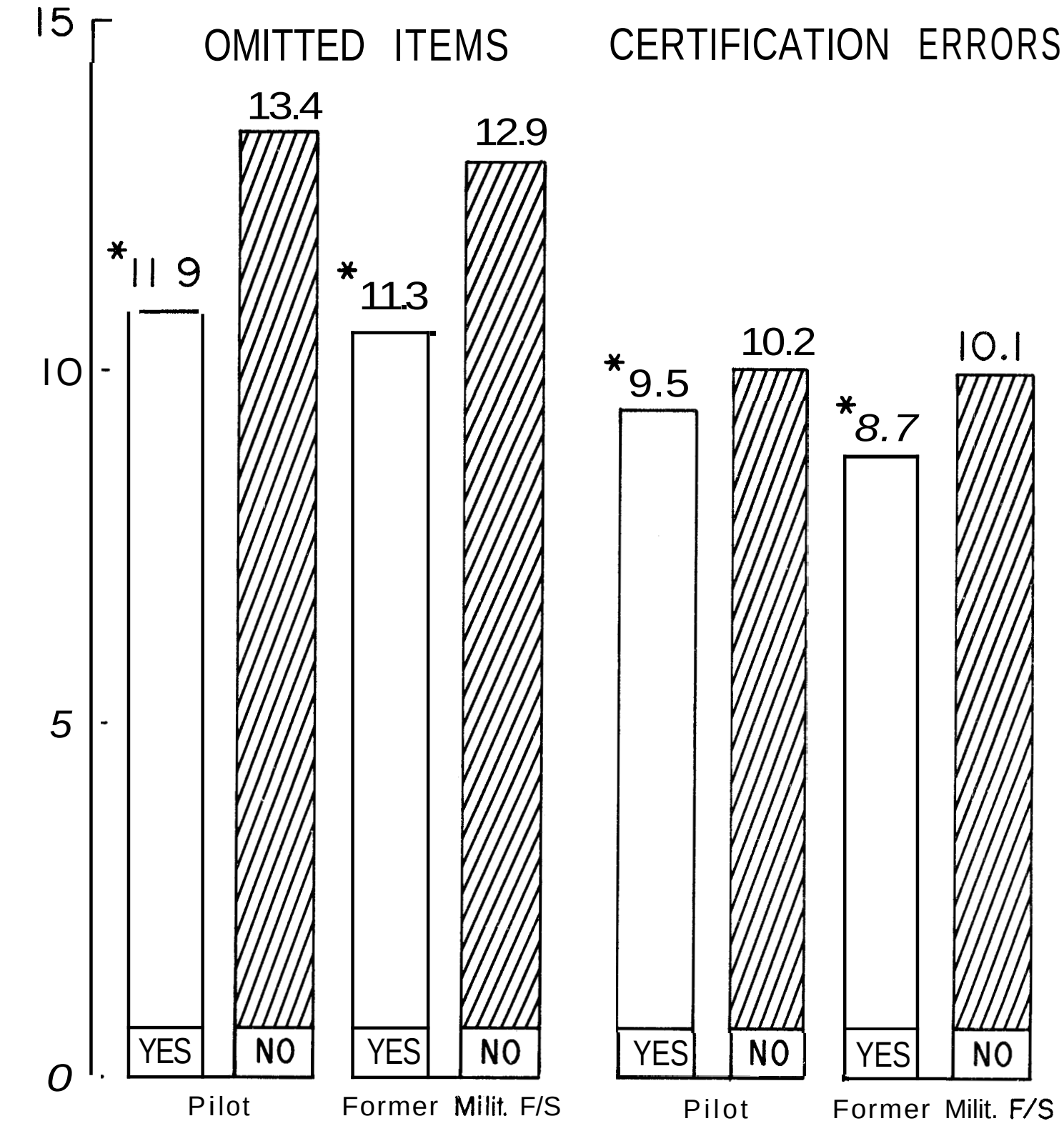

Fig. 3. Effects of pilot and military flight surgeon experience on error rates.

* Significant at 0.05 by critical ratio rate test,