

Continuum of Choice and Success: Medical Student Employment as Resident Assistants and Internship Performance as Predictors of Residency Acceptance: A 10-Year Follow-up of 1,215 Interns at a Tertiary Academic Medical Center

Vered Robinzon

Ariel University

Riki Tesler

Ariel University

Nurit Saban

Sheba Medical Center

Lilach Melzer

Sheba Medical Center

Or Shimon

Sheba Medical Center

Eden Trodler

Sheba Medical Center

Uri Manor

Sheba Medical Center

Reut Shoham

Sheba Medical Center

Gad Segal

`gad.segal@sheba.health.gov.il`

Sheba Medical Center

Research Article

Keywords: medical internship, residency selection, workplace-based assessment, early clinical exposure, resident assistant

Posted Date: June 17th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9732502/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

Background.

Developing and retaining a high-quality physician workforce across the medical education continuum is a global challenge. Although it is plausible that early voluntary clinical integration during medical school and subsequent internship performance are related to downstream residency selection, this relationship has not been well described.

Methods.

We conducted a retrospective cohort study of interns at a tertiary academic medical center (2014–2024). We examined associations between prior employment during medical school as resident assistants in our institution with both internship rotation evaluation scores and subsequent acceptance rates to residency training at the same institution.

Results.

The cohort included 1,215 interns; 264 (21.7%) had been employed as resident assistants during medical school. Overall, 382 (31.4%) interns were later accepted for residency training at our institution. Prior resident-assistant employment was associated with higher internship evaluation scores: 58.5% achieved average scores of 4–5 and 14.1% achieved the maximum score of 5, compared with 49.7% and 8.6%, respectively, among interns without this employment history ($p < 0.05$). Higher internship scores were also strongly associated with later residency acceptance (scores 4–5: 63.6% vs. 48.5%; score 5: 18.3% vs. 7.2% among those not accepted; $p < 0.001$).

Conclusion.

Medical student employment as resident assistants at our institution was associated with higher internship evaluation scores, and higher internship scores were associated with subsequent acceptance to residency at the same institution. These findings support a proposed continuum in which early voluntary clinical integration aligns with later workplace-based performance and competitive training outcomes.

Background

Global challenges in development of a high-quality physician workforce.

Medical education is seen as a longitudinal continuum, extending from undergraduate medical training through internship and ultimately to residency and independent practice [1][2]. Guaranteeing the development of a high-quality physician workforce along this path is a major challenge for healthcare organizations globally. Global shortages of physicians, rising clinical demands, and the increasing complexity of modern medicine have amplified the need to identify, train, and retain capable physicians from the earliest stages of their professional development [3, 4]. These challenges are especially evident in health systems with growing elderly populations and healthcare needs [5].

The challenges in the Israeli healthcare system.

In Israel, workforce shortages are further affected by several structural challenges unique to the national healthcare system. Although the number of physicians has increased over the past decade, the physician-to-population ratio remains below the average observed in Organization for Economic Co-operation and Development (OECD) countries. In 2022, Israel had approximately 3.5 physicians per 1,000 population, compared with an OECD average of 3.7 physicians per 1,000 population. At the same time, Israel's population has grown substantially faster than most OECD countries. Between 2010 and 2020, Israel's population increased by more than 20%, compared with about 6% across OECD countries, placing additional pressure on the healthcare workforce and requiring a proportional expansion of the physician workforce [6].

Another challenge relates to the aging of the medical workforce. In 2022, nearly half (48%) of employed specialist physicians were aged 55 years and older, the second-highest proportion among OECD countries, indicating an upcoming wave of retirements and highlighting the need to train new physicians.

In addition to broader workforce pressures, entry into medical education in Israel is highly selective and competitive [7]. Admission to Israeli medical schools requires very high academic achievements, typically including top scores on the national psychometric entrance examination and strong academic record. Candidates must also pass a multi-stage selection process that often includes structured interviews and personality assessments designed to evaluate interpersonal skills, professionalism, and suitability for the medical profession. Despite the high demand for medical training, the number of available positions in Israeli medical schools remains limited. As a result, many qualified applicants are unable to secure a place in domestic medical programs. Consequently, a substantial number of Israeli students choose to study medicine abroad, particularly in European countries, with the intention of returning to Israel to complete internship and residency training. In 2022, Israel produced 7.24 medical graduates per 100,000 population, approximately half of the OECD average of 14.3 medical graduates per 100,000 population [6]. This limited domestic training capacity has been compensated for by foreign-trained physicians. In 2023, 52% of physicians practicing in Israel received their medical degree abroad, the highest proportion among OECD countries.

However, reliance on foreign-trained physicians is expected to decline significantly in the upcoming years. In 2025, the implementation of the "Yatziv reform", which restricts recognition of medical degrees from certain foreign institutions, is projected to reduce the number of new medical graduates entering internship programs in Israel by approximately 30% [8]. This expected reduction, along with the retirement of the aging medical workforce, further emphasizes the need to strengthen domestic training capacity and optimize medical student education throughout the educational continuum.

Focusing on the transition continuum from students to interns: the role of Resident assistants.

The transition from medical student to intern and subsequently to resident represents a critical stage in the professional pathway of young physicians [1]. Progression along this pathway is highly competitive, particularly in popular specialties and in major tertiary medical centers. Identifying early indicators of professional development and clinical ability during medical training may therefore be valuable for both institutions and trainees.

One way to expose medical students to clinical work earlier is by integrating them into hospital departments during medical school [9]. Early clinical exposure has been shown to support the development of professional identity, improve communication and teamwork skills, and provide practical clinical experience [10]. In Israel, one

way this is accomplished is through medical students' employment as resident assistants (sometimes referred to in the literature as "Resident assistants" in this local context) [11]. Resident assistants are medical students in the clinical years of training who work in hospital departments after school hours. They are an integral part of the medical team and work closely with resident physicians. Responsibilities may include participating in initial patient assessment, documenting admission notes, performing physical examinations, assisting with clinical procedures, and helping formulate treatment plans [11]. This experience allows students to learn directly from real patients and become familiar with daily clinical practice [5]. It also provides an opportunity to explore specialties before choosing residency training. Working closely with residents and specialized physicians may help students build professional relationships within departments, which could support later transitions into internship and residency at the same institution [12].

The internship year in Israel is a mandatory stage for all medical graduates, both domestic and foreign. It lasts 12 months and is required to obtain a medical license and continue residency training. During this year, interns rotate through several core clinical departments such as internal medicine, surgery, emergency medicine, and pediatrics. This year provides essential clinical exposure and allows interns to acquire the practical knowledge and skills.

At the Chaim Sheba Medical Center, the largest tertiary academic hospitals in Israel, interns are supported by the hospital's Education Authority, a dedicated department that supports medical students, interns, and residents throughout their training. The Education Authority provides educational support through bedside clinical teaching, medical courses, research opportunities, and professional career counseling that helps trainees make informed decisions about their future career paths.

During the internship year, interns are evaluated at the end of each rotation by the head of the department using a standardized evaluation form. The assessment includes several domains reflecting the intern's clinical and professional performance, including theoretical knowledge, practical skills, independence, clinical judgment, motivation and curiosity, interaction with patients, teamwork with the medical staff, academic involvement, performance during on-call duties and under pressure, and professional behavior [13]. Each domain is graded on a standardized scale, and the evaluations are used to generate an overall performance score for the internship rotation [8],[15]. These structured evaluations provide an opportunity to assess interns' clinical development throughout the year and may also inform future decisions regarding residency acceptance within the institution [16],[17].

Aim of the current study.

Despite the potential advantages of working as a resident assistant during medical school, little is known about whether this role is associated with later clinical performance or residency acceptance [10]. It is unclear whether early, paid integration into a hospital department influences performance during the internship year and subsequent acceptance into residency programs[18]. The aim of the current study was therefore to examine the relationship between employment as a physician assistant during medical school, internship performance scores and acceptance into residency training within the same institution. Understanding this relationship may provide insights into how early clinical involvement relates to professional development and may help guide strategies for identifying and supporting future residents within academic medical centers.

Methods

Data mining.

Data on medical students employed at our institution as resident assistants were obtained from the Chaim Sheba Medical Center human resources database. The same source was used to identify physicians subsequently accepted to residency training at our institution. Internship evaluation data were obtained from Israeli Ministry of Health datasets accessible to Sheba Medical Center personnel. All data were retrieved after approval by the local Institutional Review Board in accordance with the Declaration of Helsinki (IRB approval #2963-26). Informed consent was waived due to the retrospective study design.

Descriptive and analytic statistics.

Categorical variables are presented as counts and percentages. Continuous variables were assessed for normality and are presented as mean $\pm$ standard deviation when normally distributed, and as median (and the interquartile range) otherwise. Group comparisons were selected according to variable type; chi-square tests were used for categorical comparisons. Analyses were performed using IBM SPSS Statistics.

Results

All 1,215 participants completed their internship at Sheba Medical Center between 2014 and 2024. Figure 1 summarizes the “continuum of choice and success” examined in this study: employment during medical school as a resident assistant at Sheba ($n = 264$), completion of internship at Sheba ($n = 1,215$), and subsequent acceptance or non-acceptance to residency training at our institution ($n = 382$ and $n = 833$, respectively).

Internship score distributions differed between interns who were later accepted to residency at Sheba ($n = 382$) and those who were not ($n = 833$). No residency-accepted interns had an average score of 2, compared with 8 (1.0%) among those not accepted. In the 2–3 range, 16 (4.2%) residency-accepted interns were observed compared with 106 (12.7%) not accepted. At the 3–4 level, 66 (17.3%) residency-accepted interns were observed compared with 255 (30.6%) not accepted. By contrast, higher average internship scores were more common among residency-accepted interns: 243 (63.6%) vs. 404 (48.5%) in the 4–5 range, and 57 (14.9%) vs. 60 (7.2%) with the maximum score of 5.

A chi-square test indicated that the overall distribution of internship scores differed significantly between groups ($\chi^2 = 67.74$, $df = 4$, $p < 0.001$). In this cohort, higher internship scores were therefore associated with subsequent residency acceptance at Sheba; however, these findings should be interpreted as associative and may reflect both measured performance and unmeasured factors influencing selection.

Choice: Prior employment as resident assistants.

A secondary analysis evaluated the association between prior employment as resident assistants during medical school and internship evaluation scores. A total of 264 interns had worked as resident assistants, whereas 951 had not. Among those with prior resident-assistant employment, 59.5% scored in the 4–5 range and 14.0% attained the maximum score of 5, compared with 51.5% and 8.4%, respectively, among those without such employment. Low scores were uncommon among those with prior resident-assistant employment (4.5% in the 2–3 range and 0.4% at ≤ 2) but were more frequent among those without this employment history (11.6% and 0.7%, respectively). These differences were statistically significant ($p < 0.05$).

Overall, prior employment as a resident assistant was associated with a statistically significant shift toward higher internship score categories.

Discussion

In this 10-year single-center cohort of 1,215 interns, two sequential associations emerged: (1) medical students who chose to work as resident assistants at our institution were more likely to achieve higher internship evaluation scores, and (2) higher internship scores were strongly associated with subsequent acceptance to residency training at the same institution. Taken together, these findings support the proposed “continuum of choice and success framework,” in which an early, voluntary decision to engage in paid clinical integration during medical school is linked to later workplace-based performance during internship, which in turn is linked to downstream selection outcomes within a competitive tertiary medical center.

The concept of a continuum is consistent with contemporary views of medical education as a longitudinal developmental pathway from undergraduate training to internship and residency, where transitions can be both “opportunity and threat” and where competence must be demonstrated in authentic clinical contexts [14]. In our data, the first step of the continuum; electing to be employed as a resident assistant; may represent more than early exposure. It may function as a structured entry into a community of practice in which students repeatedly observe, rehearse, and receive feedback on real clinical work, often under time pressure and alongside the same teams they may later seek to join. Prior literature on early clinical exposure suggests benefits in professional identity formation, communication and teamwork skills, and readiness for subsequent clinical roles [19]. Our findings extend this literature by suggesting that, when early exposure is prolonged, responsibility-bearing, and being embedded within the target institution, it may be associated with objective differences in later workplace-based assessments during internship.

The background context in Israel underscores why understanding such a continuum matters. Israel’s physician-to-population ratio remains below the OECD average, and the specialist workforce is aging, with a large fraction approaching retirement. At the same time, domestic medical school capacity is limited and historically has been supplemented by foreign-trained graduates, an inflow that is expected to decline following the Yatziv reform. In this setting, tertiary centers must both expand training pipelines and improve the efficiency and fairness of selection into residency. If employment as a resident assistant is indeed associated with improved internship performance and later residency acceptance, it may function as a locally actionable workforce-development lever: a paid role that simultaneously supports service delivery and strengthens the educational continuum by accelerating clinical socialization, clarifying specialty preferences, and allowing earlier identification of trainees who thrive in the institution’s clinical environment.

Recent policy developments in Israel further highlight the relevance of structured, supervised clinical roles during training. For example, the Israeli Ministry of Health has updated the regulation of physician associate practice and training, reflecting a broader effort to expand supervised clinical capacity and redefine task-sharing within the healthcare workforce [21]. Such reforms align with competency-based approaches that emphasize observed performance in authentic clinical settings [20].

A second implication relates to assessment. Internship performance at our institution is captured through a standardized rotation-end evaluation across multiple domains (knowledge, procedural and practical skills, independence, clinical judgment, motivation, teamwork, professionalism, and performance under pressure). Such

instruments align with the broader movement toward workplace-based assessment and competency-based medical education, where progression decisions ideally reflect observed performance in real settings rather than proxies alone [13]. The strong association we observed between higher internship scores and subsequent residency acceptance suggests that, in our setting, selection aligns with documented performance in the same clinical context in which residency will occur. This finding also resonates with evidence that workplace ratings may correlate with later training outcomes, while any single metric rarely captures “success” comprehensively [22].

At the same time, the continuum should be interpreted as associative rather than strictly causal. Students who seek employment as resident assistants may differ systematically from their peers in motivation, career clarity, time availability, or baseline academic and interpersonal skills. The observed performance advantage may therefore reflect a selection effect (high performers choose assistantship roles) as well as a training effect (assistantship roles build competence). In addition, working in a department may increase the student’s visibility to faculty and residents, strengthen mentorship ties, and improve familiarity with local workflows, factors that could influence both internship evaluations and residency acceptance. These mechanisms are not mutually exclusive; in practice, the continuum may operate through an interaction of self-selection, accelerated experiential learning, and relationship-based integration into teams. Future analyses that adjust for pre-internship academic markers, medical school of origin, and specialty preference, or that compare matched cohorts, would help clarify the relative contributions of these pathways.

Operationally, our results suggest that medical centers may benefit from viewing medical student assistantship programs as part of a deliberately designed educational pipeline rather than an ad hoc staffing solution. Clear role definitions, graduated responsibility with supervision, structured feedback, and alignment with learning objectives (e.g., documentation, initial assessments, procedural assistance, interprofessional communication) could maximize educational value while protecting patient safety. If institutions use assistantship participation as one signal in residency selection, transparency and equity safeguards are essential. Paid roles may inadvertently advantage students with geographic proximity, flexible schedules, or lower external obligations; thus, programs may need to monitor access, consider need-based supports, and ensure that non-participants are not unfairly disadvantaged. Framed appropriately, assistantship programs could complement, not replace, broader efforts to improve internship teaching, coaching, and workplace-based assessment quality through faculty development and robust feedback cultures.

Limitations

This study has several limitations. First, it was conducted at a single tertiary academic medical center, and both the structure of resident assistant roles and residency selection practices may differ across institutions and countries, limiting generalizability. Second, internship scores are supervisor-derived ratings; despite standardization, they may be influenced by rater stringency/leniency, differential exposure to evaluators, rotation context, and potential halo effects. Third, the study is observational and retrospective, and we did not adjust for potentially important confounders such as pre-internship academic performance, licensing examinations, medical school of origin (domestic vs. international), specialty preference and competitiveness, prior clinical experience outside Sheba, or socio-demographic factors; therefore, associations may reflect both training effects and self-selection of higher-performing or more motivated students into resident-assistant employment.

Conclusions

This 10-year cohort study supports a measurable “continuum of choice and success” across the medical education pathway. Medical students who chose to work as resident assistants during their clinical years were more likely to achieve higher workplace-based evaluation scores during the internship year at our tertiary medical center. In turn, higher internship scores were strongly associated with subsequent acceptance to residency within the same institution. In a national context characterized by physician workforce constraints, an aging specialist workforce, limited domestic training capacity, and expected reductions in returning foreign-trained graduates following the Yatziv reform, such assistantship roles may represent a practical approach to strengthen the pipeline from student to resident while providing earlier clinical integration. Nevertheless, these findings are associative and may reflect both developmental benefits of early responsibility and self-selection of highly motivated trainees. Prospective, multi-center studies with additional covariates are warranted to confirm generalizability and clarify causal mechanisms.

Declarations

Funding. This research had nor external funding

Consent to Publish. All authors gave their consent to publication.

Consent to Participate declaration. Informed consent was waived due to the retrospective study design.

Ethics declaration. This study was approved by the local Institutional Review Board in accordance with the Declaration of Helsinki (IRB approval #2963-26).

References

1. Prince KJAH, van de Wiel MWJ, van der Vleuten CPM, Boshuizen HPA, Scherpbier AJJA. Junior doctors’ opinions about the transition from medical school to clinical practice: a change of environment. *Educ Health (Abingdon)*. 2004;17:323–31. <https://doi.org/10.1080/13576280400002510>.
2. Ten Cate O. Entrustability of professional activities and competency-based training. *Med Educ*. 2005;39:1176–7. <https://doi.org/10.1111/j.1365-2929.2005.02341.x>.
3. (PDF) The 2017 Update: Complexities of Physician Supply and Demand: Projections from 2015 to 2030 n.d. https://www.researchgate.net/publication/315156643_The_2017_Update_Complexities_of_Physician_Supply_and_Demand_Projections_from_2015_to_2030 (accessed March 8, 2026).
4. Human resources for. health Global strategy on human resources for health: workforce 2030 n.d.
5. Health workforce and. labour market dynamics in OECD high-income countries: a synthesis of recent analyses and simulations of future supply and requirements n.d. <https://www.who.int/publications/i/item/9789241512282> (accessed March 8, 2026).
6. Dedet G, Balestat G, Gellie V, Turatto F, Dagistan E. OECD report on medical education and training in Israel. 2023.
7. Reis S, Borkan JM, Weingarten M. The current state of basic medical education in Israel: Implications for a new medical school. *Med Teach*. 2009;31:984–9. <https://doi.org/10.3109/01421590903092426>.

8. Angel Y, Barel N, Fire G. Plugging the drain: targeted policies for retaining Israeli doctors. *Isr J Health Policy Res.* 2025;14:72. <https://doi.org/10.1186/s13584-025-00737-w>.
9. Liu Ci, Tang K, pei, Wang Y, chu, Chiu Chsuan. Impacts of early clinical exposure on undergraduate student professionalism—a qualitative study. *BMC Med Educ* 2022 22:1 2022;22:435-. <https://doi.org/10.1186/s12909-022-03505-5>
10. Littlewood S, Ypinazar V, Margolis SA, Scherpbier A, Spencer J, Dornan T. Early practical experience and the social responsiveness of clinical education: systematic review. *BMJ.* 2005;331:387–91. <https://doi.org/10.1136/bmj.331.7513.387>.
11. Manor U, Bitan O, Saban-Reich N, Shoham R, Ben-Haim G, Rechavi E et al. Medical students as resident assistants: a novel approach to tackling the medical workforce shortage conundrum. *Hum Resour Health* 2025;23. <https://doi.org/10.1186/s12960-025-01018-y>
12. Cruess SR, Cruess RL, Steinert Y. Supporting the development of a professional identity: General principles. *Med Teach.* 2019;41:641–9. <https://doi.org/10.1080/0142159X.2018.1536260>.
13. Norcini J, Burch V. Workplace-based assessment as an educational tool: AMEE Guide 31. *Med Teach.* 2007;29:855–71. <https://doi.org/10.1080/01421590701775453>.
14. Teunissen PW, Westerman M. Opportunity or threat: the ambiguity of the consequences of transitions in medical education. *Med Educ.* 2011;45:51–9. <https://doi.org/10.1111/j.1365-2923.2010.03755.x>.
15. Lockyer J. Multisource feedback in the assessment of physician competencies. *J Contin Educ Health Prof.* 2003;23:4–12. <https://doi.org/10.1002/chp.1340230103>.
16. Filiberto AC, Cooper LA, Loftus TJ, Samant SS, Sarosi GA, Tan SA. Objective predictors of intern performance. *BMC Med Educ* 2021 21:1 2021;21:77-. <https://doi.org/10.1186/s12909-021-02487-0>
17. Yun JY, Ryu H, Kim JW, Yoon HB, Choi S, Park WB, et al. Subtyping of Performance Trajectory During Medical School, Medical Internship, and the First Year of Residency in Training Physicians: A Longitudinal Cohort Study. *J Korean Med Sci.* 2024;39. <https://doi.org/10.3346/jkms.2024.39.e239>.
18. Harfmann KL, Zirwas MJ. Can performance in medical school predict performance in residency? A compilation and review of correlative studies. *J Am Acad Dermatol.* 2011;65. <https://doi.org/10.1016/j.jaad.2010.07.034>.
19. Liu C, Tang K, Wang Y, Chiu C. Impacts of Early Clinical Exposure on Undergraduate Student Professionalism –A Qualitative Study. *BMC Med Educ.* 2022. <https://doi.org/10.1186/s12909-022-03505-5>. 22, Article 435.
20. Frank JR, Snell LS, Ten Cate O, et al. Competency-based medical education: theory to practice. *Med Teach.* 2010;32(8):638–45.
21. Israeli Ministry of Health. Physician Associate Program – Regulation and Academic Training. Jerusalem: Ministry of Health; 2024.
22. Miller A, Archer J. Impact of workplace based assessment on doctors’ education and performance: a systematic review. *BMJ.* 2010;341:c5064. <https://doi.org/10.1136/bmj.c5064>.

Figures

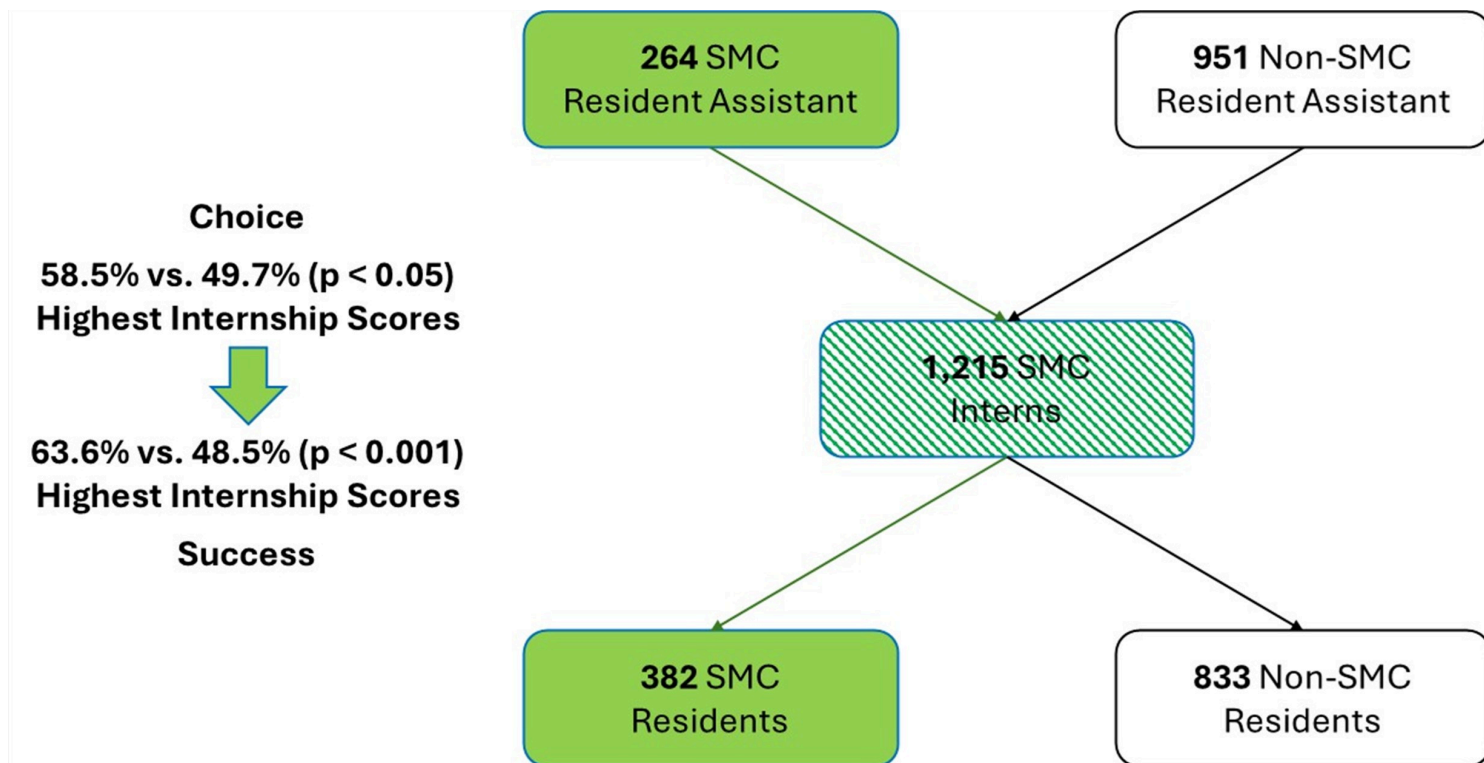


Figure 1

Continuum of choice and success