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Communication article

Perceptions Of Handgrip Strength Among Patients And Healthcare Professionals In An Internal Medicine Resident Clinic.

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Abstract

Because handgrip strength (HGS) is a reliable predictive indicator of health and a practical way to measure muscle strength, it is highly advised for usage in clinical settings. It might not be useful in therapeutic settings, though, as patients and healthcare professionals might not fully comprehend it. In a clinic for internal medicine residents, we aimed to ascertain how patients and healthcare professionals felt about HGS.

Methods: Healthcare professionals participated in regular follow-up meetings and were given didactic courses for HGS. Over the course of a roughly nine-month phased trial period, HGS was assessed on eligible older adult patients. A questionnaire comprising 10-point Likert scale response items about their experiences with HGS was given to patients and healthcare professionals. The findings were given in a descriptive manner.

Results: Overall,patients had a positive perception of HGS, as they understood HGS instructions (score:9.8 ± 0.7), their results (score: 9.5 ± 1.3), and found value in HGS for their health (score:8.4 ± 2.3). However, healthcare providers were generally neutral about HGS, such that at study end HGS was viewed as moderately valuable for their practice (score: 6.0 ± 2.1) and patients (score: 6.0 ± 2.1).

Conclusions: HGS was generally viewed favorably by patients, but healthcare professionals had a neutral opinion. HGS should be guided by our findings for potential deployment and quality control in suitable healthcare environments.

Keywords : *aging; geriatric assessment; muscle strength; muscle weakness.*

INTRODUCTION

A quick, accurate, and non-invasive way to gauge total muscular strength is to use handgrip strength (HGS) [1]. People should squeeze a handgrip dynamometer as hard as they can for many trials on each hand while seated, according to protocol instructions for gathering HGS [2]. This workable procedure permits the incorporation of a broad range of in-patient functional abilities and permits HGS to be determined discreetly in the patient's room during visits with healthcare providers [3]. Some handgrip dynamometers (hydraulic, for example) that measure HGS feature a sustainable energy source that enables mobility and operation without batteries or an electrical plug-in. Numerous clinically significant illnesses, including neurogenerative disorders, chronic cardiometabolic morbidities, and functional restrictions, are linked to low HGS [4].Peer comparisons of muscle strength across the lifespan are made possible by nationally representative age- and sex-specific HGS percentiles, which indicate weakness, which is defined by HGS and occurs when strength capacity falls below a predetermined cut-point [5]. Therefore, it is highly advised that healthcare personnel routinely collect HGS, which is considered a vital sign and biomarker of health status [6].Healthcare professionals

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may not regularly use HGS for patient treatment, despite its extensive clinical utility and predictive value [7]. Although few, attempts to apply HGS in therapeutic settings have proved successful. HGS measurement, for instance, assisted in identifying a large percentage of weak patients, despite the fact that clinical staff and patients had a variety of facilitators and barriers to applying HGS in five acute care wards in the United Kingdom [8]. Furthermore, HGS was easy to use, had no effect on dietitian efficiency, and supported the usefulness of nutrition evaluations, including follow-ups, according to a quality improvement study of its application in dietitian care in inpatient rehabilitation units [9].Although HGS is increasingly being used in clinical settings as part of translational research, it is still crucial to comprehend how patients and healthcare professionals in various healthcare settings view HGS in order to better define adoption. Thus, the purpose of this pilot study was to investigate how patients and healthcare professionals in an internal medicine resident clinic perceived HGS.

MATERIALS AND METHODS

Participants

This pilot trial, which took place in an internal medicine resident clinic, used a cross-sectional design. Our pilot study design was based on earlier research and adhered to quality improvement criteria [8,10]. 30 eligible members of the healthcare team—24 medical residents, 4 regularly attending physicians, and 2 regularly attending nurses—were working in the clinic at the start of the study. Attending physicians were given alternating shifts in the clinic, while resident physicians worked on rotations. The design of this pilot study was split into three segments, each lasting roughly three months, over a study period of roughly nine months in order to facilitate familiarity and workflow with HGS measures in the clinic.

During the first phase, pertinent healthcare providers participated in an educational session regarding HGS that covered background information, clinical relevance, measuring guidelines, and peer practice. During visits with eligible patients, residents were also instructed to take HGS measures and enter the results in patient charts. In order for residents to observe HGS readings prior to patient visits, nurse staff were asked to take HGS measures throughout the rooming process and include HGS values as a vital sign in patient charts during the second phase. In the third phase, healthcare practitioners were urged to address low HGS values with patients as a sign of frailty, while nurse staff continued to do HGS measures during rooming and record values in charts. In patient visit rooms and healthcare provider offices, HGS reminders and guidance sheets were displayed. In order to be eligible for HGS testing, patients had to be at least 65 years old, able to squeeze a handgrip dynamometer with one hand, free of neurological impairment (such as Parkinson's disease or stroke), dementia, or severe hand or wrist arthritis, and not on hospice. Healthcare providers might not have conducted HGS testing on eligible patients at their discretion, nevertheless, because of a higher patient volume, a shortage of staff, and the pilot nature of this study (e.g., time limits). The North Dakota State University Institutional Review Board (IRB0004892) determined this pilot study was exempt and therefore informed consentwas provided by completing questionnaires in order to maintain anonymity.

In order to be eligible for HGS testing, patients had to be at least 65 years old, able to squeeze a handgrip dynamometer with one hand, free of neurological impairment (such as Parkinson's disease or stroke), dementia, or severe hand or wrist arthritis, and not on hospice. Healthcare providers might not have conducted HGS testing on eligible patients at their discretion, nevertheless, because of a higher patient volume, a shortage of staff, and the pilot nature of this study (e.g., time limits).Informed permission was obtained by filling out questionnaires to preserve anonymity after the North Dakota State University Institutional Review Board (IRB0004892) ruled that this pilot study was exempt.Because all answers to the questionnaire regarding HGS were voluntary, anonymous, and unidentifiable, patients and healthcare professionals who chose to participate granted their consent.

Measures

HGS was measured using a Jamar hydraulic handgrip dynamometer (Lafayette Instrument Company; Lafayette, IN). Our testing was guided by HGS measurement protocol guidelines [2]. In particular, medical professionals allowed a practice run, adjusted the dynamometer to each patient's hand size, and described the HGS measurement. The patients were sat in a chair with their forearms and backs resting against the chair rests.Patients held the dynamometer with their elbow flexed at a 90-degree angle and their hand in a neutral position, meaning their knuckles were vertical. Patients were instructed to squeeze the dynamometer as hard as they could, starting with their right hand, and to exhale as they did so, all the while receiving verbal encouragement from the healthcare professional.Patients alternated between hands and completed two HGS measures on each hand. Healthcare professionals examined the highest reported HGS reading. Males and girls weighing less than 26 kg and less than 16 kg, respectively, were deemed feeble [11]. When classifying HGS, two HGS trials are suitable for each hand [12].

Patients were invited to freely fill out an anonymous questionnaire about their opinions of HGS after undergoing HGS testing. The researchers developed the questionnaire, which was based on a related study [8], in order to gather pertinent data. A 10-point Likert scale was used to evaluate five of the questionnaire's components. which inquired about

(1) how well you understood the directions provided by your healthcare provider regarding the completion of a handgrip strength measurement, (2) how well you understood the assessment made by the handgrip strength measurement, (3) how well you understood the findings of your handgrip strength test, (4) how beneficial you thought the handgrip measurement was for your health, and (5) how much you would suggest handgrip strength to a peer for their health. Healthcare professionals were invited to voluntarily fill out anonymous questionnaires regarding their opinions and experiences with HGS testing at the beginning and conclusion of each phase. The researchers developed this questionnaire, which was based on a different study [8], in order to gather pertinent data. Certain items in the healthcare provider questionnaires were designed to be specific to the project phase finished at the time of administration, which is a component of quality improvement assessments, even if other items remained the same throughout the study period [10]. To preserve anonymity, all completed surveys were gathered and stored in a safe place. Questionnaire items for patients and healthcare providers were designed to be succinct and pertinent in order to reduce the time burden be mitigated. Because his pilot study was descriptive in nature, the results of the patient and healthcare provider questionnaires were reported as mean ± standard deviation.

RESULTS

The results of 93 patients' HGS measurement perceptions are shown in Table 1. Patients' opinions of HGS were generally favorable; they comprehended the test's results (score: 9.5 ± 1.3), what HGS was assessing (score: 9.6 ± 1.3), and HGS instructions (score: 9.8 ± 0.7). Additionally, patients would suggest HGS testing to a peer for health reasons (score: 8.7 ± 2.3) and felt that it was beneficial to their health (score: 8.4 ± 2.3). Displays the findings of the healthcare providers' opinions regarding HGS testing. Twenty-four healthcare professionals willingly filled out a questionnaire at baseline. Overall, healthcare practitioners were comfortable assessing HGS on a patient (score: 8.5 ± 1.8), explaining its significance (score: 7.6 ± 1.9), and feeling informed about HGS (score: 7.3 ± 2.1). Twenty healthcare providers reported being largely comfortable assessing HGS on patients at the end of Phase 1 (score: 6.9 ± 3.0), but they could have thought that HGS was not useful to their patients (score: 3.7 ± 2.1). Additionally, it was revealed that the frequency of measuring HGS on patients was decreased (score: 3.1 ± 2.0). At the end of Phase 2, fewer healthcare professionals were observed to be measuring HGS on patients (score: 2.6 ± 1.4).On the other hand, 19 healthcare professionals had a neutral opinion regarding their practice (score: 5.1 ± 2.1) and the usefulness of HGS to patients (score: 4.7 ± 2.2).

DISCUSSION

According to the main conclusions of this pilot study, elderly patients who visited an internal medicine resident clinic had a thorough understanding of HGS testing, including its instructions, its use as a strength capacity evaluation, and its outcomes. Additionally, patients thought that HGS assessments were useful for their health and would suggest HGS to a peer.Overall, even though healthcare professionals felt at ease using HGS, it's possible that they thought HGS was less beneficial for patients than what their patients thought. By proposing actions that could enhance patient care, our findings should be utilized to direct patient-physician interactions and advance quality improvement in healthcare environments.

Our results regarding patient opinions of HGS are in line with those of another study that aimed to apply HGS in clinical settings, which found that patients believed that HGS was beneficial to their health and comprehended the instructions for the test [8]. Given that muscle strength testing is a common component of patient physical examinations [14] and that people receiving routine healthcare may benefit from HGS testing due to their generally lower strength capacity [15], patients' comprehension and acceptance of HGS may support the readiness for implementation in clinical practice as appropriate [13]. Our results also show that patients comprehend the relationship between their muscle strength and HGS outcomes.Although low HGS may be a better predictor of early all-cause and cardiovascular death than systolic blood pressure, blood pressure is a standard assessment in clinical settings that patients also understand [16]. Clinical measurements of cardiovascular and muscular health may improve quality assurance in healthcare settings and expand patient evaluations.

Uncertainty in managing weakness was a common reason given by resident physicians for their difficulties using HGS measures. Low HGS predicts disease, disability, and time to death, just as hypertension [3]. HGS requires more research in this area, whereas hypertension has established criteria and well-researched therapeutic alternatives [17]. As a result, residents were advised to use prescribed physical therapy, diet, and physical activity for patients with low HGS; nevertheless, consistency in using HGS may not last in the absence of clear recommendations and proof of effectiveness. Time is an anticipated obstacle to any new measure, including HGS, since integrating new instruments and techniques from research into clinical practice can be time-consuming in medical environments.Compared to other chronic conditions, getting HGS measurements and creating a management strategy for patients with low HGS were given less priority. It is anticipated that continued research on the implications of HGS in expanding education to physicians and trainees on

these implications, including defining interventions for low HGS, will increase healthcare providers' acceptance and use of HGS. Additional research on the role of HGS in other, non-teaching clinics may also shorten time and learning curves.

Although time is frequently constrained by the provider's workload [19], patients cherish conversations with their healthcare provider [18]. Nonetheless, quality improvement still depends on using innovative instruments and techniques to enhance patient outcomes [20]. For instance, some Because routine HGS measures aid in the prediction of hospital-specific outcomes including length of stay and quality of life, they may be advantageous for internal medicine clinics [21]. Our results indicate that although healthcare professionals who answered our surveys generally understood HGS and felt at ease measuring patients, they maintained a neutral stance on value, which was different from how their patients felt about HGS. Age-friendly clinics and other transformative healthcare environments may help to clarify the inclusion of HGS in the "4Ms" mobility assessments [22, 23].Healthcare professionals should keep looking for new techniques and resources to enhance patient care, such as HGS, but they should also take into account the tools' usefulness in particular healthcare contexts, including patient applicability.

There are some restrictions to be aware of. To ensure regulatory compliance, HGS completion rates were not disclosed here. Healthcare provider questionnaire questions, on the other hand, might be used as a proxy for the HGS completion rate, suggesting that completion may have been lower, perhaps as a result of understaffing. Because the questionnaires were optional, we saw attrition in the answers from healthcare providers. A more focused strategy to continuously gather healthcare provider replies over time may have assisted in reducing this attrition. As a result, bias in respondents may have affected our findings, even though the direction of bias is uncertain. Our pilot study design used a phased strategy to measure HGS in order to facilitate learning experiences and transitions.To save time, the patient and healthcare provider questionnaires were condensed, and the items in the provider questionnaires were changed to reflect the pilot study's experiences and phase. Furthermore, no well-validated surveys on this topic were known to exist; nonetheless, the investigators' questionnaires for patients and healthcare providers were not dependability tested. In an attempt to learn how patients and healthcare professionals view HGS, our findings were presented as descriptive. This information could aid in the deployment of HGS and quality enhancement in pertinent healthcare settings. Notwithstanding our shortcomings, this work has a number of implications for further investigation. For instance, elderly patients attending a clinic run by internal medicine residents were included in our sample.

Our study's methodology may be applicable to different patient populations (like middle-aged people), clinical settings (like family medicine), and healthcare practitioners (like non-residents). The transition from HGS use to clinical practice may be facilitated by students completing HGS trainings. We saw decreases in healthcare provider input, even though our sample size from patient surveys was sufficient given the study's design and restrictions. However, sampling might rise when various patient types, clinical settings, and healthcare providers are taken into account. Similarly, analyzing patient views of HGS longitudinal designs may allow the evaluation of change, and shorter response periods for healthcare professional questionnaires may increase response rates.

CONCLUSIONS

According to the results of our pilot study, patients who visited an internal medicine resident clinic had generally positive opinions about HGS. Patients specifically comprehended HGS and thought the technique was beneficial to their health. The opinions of providers regarding HGS were largely indifferent. When appropriate, quality improvement and the application of HGS in clinics should be guided by our findings. When taking into account the kinds of patients who frequent clinics and the amount of time needed for use prior to adoption, trust should be given to the usefulness of HGS.

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