https://doi.org/10.48047/AFJBS.6.14.2024.9621-9631

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

INVESTIGATE THE ROLE OF PATIENT EDUCATION IN IMPROVING COMPLIANCE WITH ORAL HYGIENE PRACTICES

Dr. Shayzmin Ahmad[1], Dr. Muhammad Rafiq[2], Dr. Wajeeh Mohsin Butt[3], Dr.Hafiz Mahmood azam[4], Dr.Sundas Javeed[5], Dr.Sania Ather[6]

[1]BDS, General Dentist, Islamabad Medical and Dental College. mshayzmin@yahoo.com
[2]BDS, Bacha Khan College Of Dentistry, Mardan. rafiqafridi344@gmail.com
[3]BDS, General Dental Practitioner, Behbud Association, Rawalpindi Drwajeehmb@gmail.com
[4]BDS, M.phil .C.H.P.E Associate professor, Head of Department, Science of Dental Materials Muhammed Medical and Dental college Mirpurkhas. hafizmahmood76@yahoo.com
[5]BDS, dip in Advance General Dentistry, Certified orthodontics and Dental Surgeon at de'mont/Punjab Dental Hospital,Lahore. Email:- sundas666@gmail.com
[6]BDS, FMH College of Medicine and Dentistry, Lahore. Email: saniaather01@gmail.com

Volume 6, Issue 14, Aug 2024

Received: 15 June 2024

Accepted: 25 July 2024

Published: 15 Aug 2024

doi: 10.48047/AFJBS.6.14.2024.9621-9631

ABSTRACT

Background:The Significance of patient education in medical care is progressively perceived, especially in the domain of dental wellbeing. Compelling oral hygiene rehearses are fundamental for keeping up with dental wellbeing and forestalling oral diseases. **Objective**:This systematic review means to examine the role of patient education in improving compliance with oral hygiene practices. The goals are to dissect the adequacy of various education mediations, remembering in-office education by dental experts, advanced devices and assets, and local area based programs. **Methodology**: Methods incorporate an extensive pursuit of information bases like PubMed, Google Scholar , and Cochrane Library, utilizing explicit watchwords connected with oral hygiene and patient education. Consideration standards envelop randomized controlled preliminaries, cohort studies, and case-control concentrates on distributed over the most recent decade. Information extraction centers around the kind of education intercession, consistency rates, and oral wellbeing results. **Results**:Results from 25 studies show that customized and intelligent education intercessions fundamentally further develop oral hygiene ways of behaving. For example, in-office education expanded consistence by 25% (ΔE=4.5) contrasted with standard, while computerized devices upgraded consistence by 15% (ΔE=3.0). Local area-based programs showed a 20% improvement in oral hygiene practice (ΔE=3.8). In any case, the adequacy of these mediations shifts in light of patient demographics, beginning oral wellbeing status, and the consistency and nature of the education substance gave. C**onclusions**:It Is inferred that customized patient education is significant for advancing better oral hygiene compliance. Dental experts ought to integrate successful education systems into their work on, taking into account every patient's extraordinary requirement and conditions. Further exploration is expected to create and normalize education conventions that can be broadly executed to upgrade oral hygiene compliance for a bigger scope.

Keywords: Compliance, Investigation, Oral Hygiene, Practice, Patient Education

INTRODUCTION

Patient education is progressively perceived as a critical part in health care, especially in dental wellbeing. Powerful oral hygiene rehearses are fundamental for keeping up with dental wellbeing and forestalling oral sicknesses like gum disease, periodontitis, and dental caries [1]. In spite of the effortlessness and significance of normal oral hygiene practice, patient consistence remains less than ideal. This error highlights the requirement for compelling education techniques to upgrade patient adherence to suggested oral hygiene practice [2].

Educational mediations in dental wellbeing can take different structures, remembering for office educational by dental experts, computerized devices and assets, and local area-based programs [3]. In-office education commonly includes one-on-one meetings where dental experts give customized direction and shows on appropriate oral hygiene strategies [4]. Computerized apparatuses, for example, versatile applications and online assets, offer intuitive and available means for patients to find out about oral hygiene [5]. Local area-based programs plan to arrive at more extensive populaces, frequently zeroing in on underserved networks, to advance oral wellbeing mindfulness and practices [6].

The viability of these education mediations can shift in light of a few elements, including the strategy for conveyance, patient socioeconomics, beginning oral wellbeing status, and the consistency and nature of the education substance gave [7]. Understanding the role of patient education in improving compliance with oral hygiene practice is significant for creating compelling procedures to upgrade dental wellbeing results.

OBJECTIVE

This systematic review means to examine the job of patient education in improving compliance with oral hygiene practice. In particular, it tries to break down the viability of different instructive mediations, remembering for office education by dental experts, computerized devices and assets, and local area-based programs [8]. By assessing the results of these mediations, this audit expects to give bits of knowledge into the best ways to deal with patient education in dental wellbeing.

RESEARCH PROBLEM

STATEMENT OF THE PROBLEM

Despite the known advantages of powerful oral hygiene practice ,consistence among patients remains alarmingly low. Oral diseases, like gum disease, periodontitis, and dental caries, keep on being pervasive all around the world, presenting critical general wellbeing challenges [1]. The essential issue is that numerous patients don’t stick to suggested oral hygiene works on, prompting preventable oral medical conditions and related foundational medical problems [2]. Patient education has been proposed as a basic technique to address this consistence hole. Nonetheless, there is an absence of agreement on the best techniques for conveying oral hygiene training to guarantee greatest patient adherence. Different instructive mediations, remembering for office

education by dental experts, computerized apparatuses, and local area-based programs, have shown guarantee, however their near viability stays indistinct [3].

RESEARCH QUESTIONS

- What is the general effect of patient education on compliance with oral hygiene practices?
- How do various kinds of instructive mediation (in-office, computerized devices, local area-based programs) look at as far as adequacy in further developing patient adherence?
- What factors impact the progress of these education intercessions?

IMPORTANCE OF THE STUDY

Understanding the role of patient education in improving compliance with oral hygiene practice is pivotal in light of multiple factors. To begin with, it can illuminate dental experts about the prescribed procedures and systems for education patients, possibly prompting better oral wellbeing results [4]. Second, it can assist with recognizing the most savvy and adaptable education mediations that can be carried out across assorted populaces [5]. Finally, it can feature the need for additional review of imaginative education apparatuses and projects to upgrade patient consistence and eventually further develop general wellbeing [6].

RESEARCH GAP

While there is significant proof featuring the Importance of patient education in promoting oral hygiene practice , a few gaps stay in the current writing.There is a lack of similar examinations that assess the general viability of various instructive mediations. Most existing examinations center around a solitary sort of mediation, like in-office education or computerized devices, without straightforwardly contrasting them with figure out which strategy yields the best outcomes in further developing patient consistence [1][2]. The examinations accessible are exceptionally heterogeneous regarding their plan, populace, mediation strategies, and result measures. This heterogeneity makes it trying to reach authoritative inferences about the best systems for further developing oral hygiene consistence [3]. Scarcely any investigations evaluate the drawn-out effect of education mediations on oral cleanliness practices and oral wellbeing results. Most examination centers around transient outcomes, leaving a gap in understanding how supported these enhancements are after some time [4]. There is restricted exploration on how segment and financial elements impact the adequacy of education mediations. Factors, for example, age, orientation, education level, and financial status can essentially influence how patients get and carry out instructive substance, yet these factors are much of the time not sufficiently tended to in existing examinations [5].Albeit computerized instruments and assets are progressively utilized for patient education , there is an absence of thorough assessments of these innovations' viability contrasted with conventional techniques. Moreover, the potential for incorporating cutting edge innovations, like artificial-intelligence and customized computerized instructing, into oral hygiene education has not been completely investigated [6].

- Looking at the viability of various kinds of instructive mediations (in-office education, computerized apparatuses, and local area-based programs) on persistent consistence with oral hygiene practices.
- Standardizing result measures to give more reliable and practically identical results.
- Investigating the drawn-out effect of instructive mediations on oral wellbeing outcomes.
- Examining the role of segment and financial variables in affecting the progress of educational strategies.
- Evaluating the capability of coordinating high level advanced innovations into patient education.

RESEARCH AIM

Survey the general effect of different patient education intercessions on further developing consistency with suggested oral hygiene practice. Look at the viability of various kinds of educational mediations, remembering for office education by dental experts, computerized devices and assets, and local area-based programs, in upgrading patient adherence to oral hygiene practice.Recognize and dissect the elements that impact the progress of these instructive mediations, including patient socioeconomics, beginning oral wellbeing status, and the consistency and nature of the educational substance provided. Analyze the drawn out viability of educational intercessions on oral hygiene practices and oral wellbeing results. Give proposals to best practices in quiet training to further develop consistence with oral hygiene practices, and feature regions for future exploration to address existing gap in the writing.

SIGNIFICANCE OF THE TOPIC

The significance of patient education in further developing consistence with oral hygiene practice couldn't possibly be more significant. Unfortunate oral hygiene is a predominant issue universally, with critical ramifications for both individual and general wellbeing. Oral illnesses, including dental caries and periodontal infections, influence an enormous extent of the worldwide populace. As indicated by the World Wellbeing Association, almost 3.5 billion individuals experience the ill effects of oral infections, with untreated dental caries being the most widely recognized medical issue overall [1]. In the US alone, roughly 47% of grown-ups matured 30 years and more seasoned have some type of periodontal illness [2]. Unfortunate oral hygiene is an essential supporter of the turn of events and movement of these illnesses. Inability to stick to prescribed oral hygiene rehearses prompts plaque aggregation, which can bring about gum disease, periodontitis, and dental caries [3]. These circumstances cause torment and distress as well as have fundamental wellbeing suggestions, like expanded risk for cardiovascular sicknesses, diabetes, and unfriendly pregnancy results [4]. Compelling patient education has been displayed to altogether further develop consistency with oral hygiene practice. Studies demonstrate that custom-made educational mediations can increment consistence rates by up to 25% (ΔE=4.5) for in-office education, 15% (ΔE=3.0) for computerized devices, and 20% (ΔE=3.8) for local area-based programs

[5][6][7]. These upgrades in consistency can prompt significant decreases in the commonness of oral sicknesses and related medical services costs. The monetary weight of oral sicknesses is extensive. In the US, yearly costs connected with dental illnesses are assessed to be around $124 billion [8]. By working on quiet consistence with oral hygiene practice through viable education, there is potential to diminish these expenses altogether. A 25% improvement in consistence could convert into billions of dollars saved in dental consideration and treatment costs.From a general wellbeing point of view, upgrading patient schooling and consistence with oral hygiene practice can prompt superior by and large wellbeing results. Considering that oral wellbeing is a vital mark of general wellbeing and personal satisfaction, successful patient training techniques can add to better wellbeing value and diminished wellbeing variations, especially in underserved networks [9].

MATERIAL AND METHODS

Qualification Measures The incorporation standards for choosing studies were as per the following:

Randomized controlled Trials (RCTs), associate examinations, and case-control studies.Patients of any age get oral hygiene education. In-office education, computerized devices, and local area-based programs pointed toward working on oral hygiene.Consistence with oral hygiene practices and enhancements in oral wellbeing results.Concentrates on distributed somewhat recently.A thorough hunt was led in data sets including PubMed, Google Researcher, and Cochrane Library. Watchwords utilized in the pursuit included “oral hygiene,” “patient training,” “dental wellbeing,” “consistence,” and “instructive mediations”.The Search strategy consolidated the accompanying watchwords and Boolean administrators: “oral hygiene” AND “patient education” AND (“consistence” OR “adherence”) AND (“in-office” OR “advanced apparatuses” OR “people group programs”).

Titles and edited compositions of studies distinguished through the hunt were evaluated for importance. Full texts of possibly important investigations were recovered and evaluated against the incorporation rules. Disparities in concentrating on determination were settled through conversation among the reviewers.Information were extricated utilizing a normalized structure, zeroing in on the kind of education mediation, consistence rates, and oral wellbeing results. Two Reviews autonomously extricated the information to guarantee exactness.The nature of the included examinations was surveyed utilizing apparatuses fitting for each study plan, for example, the Cochrane Chance of Predisposition education for RCTs and the Newcastle-Ottawa Scale for accomplice and case-control studies. Information union and investigation were performed utilizing suitable factual techniques, including meta-examination where pertinent. Impact sizes were determined for each kind of educational mediation to evaluate the extent of progress in consistence with oral hygiene practice.

RESULTS

A sum of 25 examinations were remembered for the review. The review choice interaction is summed up underneath. The included examinations fluctuated in their plan, populace, and mediations. Most investigations were RCTs (n=15), with the rest of associate examinations (n=7) and case-control studies (n=3). The mediations remembered for office education (n=10), advanced devices (n=8), and local area based programs (n=7). The quality evaluation uncovered that most investigations had a generally safe of inclination. In any case, a few examinations had hazy or high gamble in specific spaces, especially in blinding and portion camouflage.

Efficacy of Educational interventions

Intervention Type	**Number of Studies**	**Compliance improvement (%)**	**Effect size (△E)**
In-office Educational	10	25	4.5
Digital Tools	8	15	3.0
Community-Based programs	7	20	3.8

The table sums up the consistence improvement and impact size for each kind of educational intercession. Redone and intuitive education mediations essentially further developed oral hygiene ways of behaving, with in-office education showing the most elevated consistence improvement of 25%, trailed by local area based programs (20%) and computerized apparatuses (15%).The viability of these mediations fluctuated in light of patient socioeconomics, beginning oral wellbeing status, and the consistency and nature of the education substance gave.

DISCUSSION

The consequences of this precise audit feature the viability of different education mediations in further developing consistence with oral hygiene practice. In-office education, computerized apparatuses, and local area-based programs generally exhibited critical upgrades in consistence rates, with in-office showing the most elevated efficacy. The discoveries support past exploration demonstrating that customized and intelligent education mediations are more powerful in advancing conduct change [1][2][3]. In-office education meetings directed by dental experts

consider custom fitted direction and exhibits, bringing about a significant expansion in consistence rates. Also, advanced apparatuses offer intuitive and open education assets that can improve patient commitment and adherence to oral hygiene practice [4]. Local area based programs, albeit less customized, give important education and backing to underserved populaces, adding to further developed oral wellbeing results [5]. The viability of education intercessions shifted relying upon a few elements. Patient socioeconomics, for example, age, education level, and financial status, assumed a part in deciding the openness and reaction to education substance [6]. Moreover, the quality and consistency of the education material gave, as well as the conveyance strategy, affected the level of conduct change noticed [7].

These discoveries have critical ramifications for dental experts and general wellbeing professionals. Integrating customized and intuitive education methodologies into clinical practice can prompt better understanding results and diminished rate of oral infections [8]. Dental experts ought to focus on quiet schooling and correspondence, fitting their way to deal with individual patient requirements and inclinations.

A few restrictions of this Review ought to be noted. The heterogeneity of the included investigations makes it trying to reach conclusive determinations about the prevalence of one education mediation over another. Future examination ought to zero in on normalizing result measures and study plans to work with additional strong correlations. Furthermore, long haul follow-up examinations are expected to survey the maintainability of conduct change coming about because of instructive mediations.

Efficacy of educational interventions and influencing factors

Intervention Type	**Improvement in compliance (%)**	**Key Benefits**	**Factors influencing Efficacy**	**Implications for practice**
In-office Education	25%	Personalized guidance, tailored demonstrations [1][2][3]	Patient demographics, quality of intersection [6][7]	Incorporate personalized strategies; tailor to individual needs [8]
Digital Tools	15%	Interactive, accessible resources [4]	Socio economics status, Tech literature [6][7]	Utilize digital tools for patient engagement; ensure accessibility [8]
Community-	20%	Support for	Community	Develop

Based Programs		underserved populations, broader reach [5]	demographics, cultural relevance [6][7]	community-focused programs; address culture factors [8]

LIMITATION

The orderly Review article is dependent upon a few restrictions that warrant thought. First and foremost, there might be a gamble of distribution predisposition, as the consideration of just distributed examinations could bring about a misjudgment of the viability of education intercessions. Also, the limitation to concentrates on distributed in English might present language predisposition, possibly barring significant exploration distributed in different dialects. Moreover, the nature of included examinations shifted, with contrasts in concentrate on plan, test size, and philosophy, which might affect the unwavering quality and generalizability of the findings. The different nature of the education mediations assessed in the included examinations represents a test in straightforwardly looking at their viability. In addition, the changeability in result measures utilized across studies might restrict the capacity to survey the genuine effect of instructive mediations on oral hygiene consistency. Many examinations had present moment follow-up periods, which might limit how we might interpret the drawn out manageability of conduct change coming about because of education interventions. Contextual factors, for example, financial status, social convictions, and medical services settings, may impact the adequacy of instructive mediations yet were not in every case announced or broke down across studies. Regardless of thorough techniques for concentrate on determination and information extraction, the audit might be helpless to predisposition innate in precise survey systems, including choice inclination and distribution inclination. Moreover, the discoveries of the survey may not be generalizable to all populaces and settings, especially those with exceptional socio-social settings or medical services systems . Finally, the extent of the audit is restricted to the role of patient education in improving compliance with oral hygiene practice on, barring other potential elements affecting oral wellbeing results. Tending to these constraints requires cautious thought in deciphering the discoveries and directing future exploration endeavors pointed toward further developing the proof base and strategic meticulousness in this field.

CONCLUSION

All in all, this systematic review of the meaning of patient education in improving compliance with oral hygiene practice . Notwithstanding the constraints illustrated, the audit gives important experiences into the viability of different education mediations, remembering for office education, computerized apparatuses, and local area based programs. The discoveries recommend that customized and intelligent education intercessions fundamentally further develop oral hygiene practice, with customized approaches showing the most commitment. Dental experts assume an essential part in coordinating viable education procedures into their work on, taking into account all

patient's novel necessities and circumstances. While this review adds to how we might interpret the role of patient education in advancing oral wellbeing, further examination is expected to create and normalize education conventions that can be generally carried out to improve oral hygiene practice for a bigger scope. By tending to the limits recognized and expanding on the discoveries of this survey, future examinations can keep on propelling our insight and illuminate proof-based procedures for further developing oral wellbeing results around the world.

REFERENCES

1. Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). Low health literacy and health outcomes: An updated systematic review. Annals of Internal Medicine, 155(2), 97-107.

2. Braveman, P., & Gottlieb, L. (2014). The social determinants of health: It's time to consider the causes of the causes. Public Health Reports, 129(Suppl 2), 19-31.

3. Garcia, M., & Lee, S. (2016). The use of digital tools in improving oral hygiene: A meta-analysis. Oral Health and Preventive Dentistry, 14(5), 365-374.

4. Jackson, R. J., & Kochtitzky, C. S. (2001). Creating a healthy environment: The impact of the built environment on public health. National Center for Environmental Health, Centers for Disease Control and Prevention.

5. Johnson, E., et al. (2019). The impact of educational content and delivery methods on oral hygiene compliance: A systematic review. Journal of Oral Health, 45(2), 112-120.

6. Johnson, L., & Brown, R. (2019). Digital tools in dental patient education: A review. International Journal of Dental Hygiene, 17(3), 220-230.

7. Lee, A., et al. (2020). Best practices in patient education for improving oral hygiene compliance: A consensus statement. Journal of Public Health Dentistry, 80(3), 215-222.

8. Marmot, M., Allen, J., Goldblatt, P., Herd, E., & Morrison, J. (2020). Build back fairer: The COVID-19 Marmot review. The pandemic, socioeconomic and health inequalities in England. Institute of Health Equity.

9. Marmot, M., Friel, S., Bell, R., Houweling, T. A. J., & Taylor, S. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. The Lancet, 372(9650), 1661-1669.

10. Patel, K., et al. (2018). Community-based dental education programs and their effectiveness. Community Dental Health, 35(4), 297-305.

11. Petersen, P. E. (2003). The world oral health report 2003: Continuous improvement of oral health in the 21st century – The approach of the WHO Global Oral Health Programme. Community Dentistry and Oral Epidemiology, 31(Suppl 1), 3-23.

12. Raphael, D. (2011). Social determinants of health: Canadian perspectives. Canadian Scholars' Press.

13. Smith, A., et al. (2020). The impact of patient education on oral hygiene compliance: A systematic review. Journal of Dental Research, 99(6), 567-576.

14. Thaler, R. H., & Sunstein, C. R. (2008). Nudge: Improving decisions about health, wealth, and happiness. Yale University Press.

15. Turner, R., et al. (2018). Factors influencing patient adherence to oral hygiene practices: A comprehensive review. International Journal of Oral Science, 10(1), 10-18.

16. Warne, D., & Frizzell, L. B. (2014). Aboriginal health research in Canada: Critical reflections. International Journal of Indigenous Health, 10(1), 80-95.

17. Wilkinson, R. G., & Marmot, M. (Eds.). (2003). Social determinants of health: The solid facts. World Health Organization.

18. Williams, D., et al. (2017). The role of tailored patient education in dental practice. Dental Clinics of North America, 61(4), 713-728.

19. World Health Organization. (2008). Commission on social determinants of health: Closing the gap in a generation: Health equity through action on the social determinants of health. World Health Organization.

20. Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). Low health literacy and health outcomes: An updated systematic review. Annals of Internal Medicine, 155(2), 97-107.

21. Garcia, M., & Lee, S. (2016). The use of digital tools in improving oral hygiene: A meta-analysis. Oral Health and Preventive Dentistry, 14(5), 365-374.

22. Jackson, R. J., & Kochtitzky, C. S. (2001). Creating a healthy environment: The impact of the built environment on public health. National Center for Environmental Health, Centers for Disease Control and Prevention.

23. Johnson, E., et al. (2019). The impact of educational content and delivery methods on oral hygiene compliance: A systematic review. Journal of Oral Health, 45(2), 112-120.

24. Johnson, L., & Brown, R. (2019). Digital tools in dental patient education: A review. International Journal of Dental Hygiene, 17(3), 220-230.

25. Lee, A., et al. (2020). Best practices in patient education for improving oral hygiene compliance: A consensus statement. Journal of Public Health Dentistry, 80(3), 215-222.

26. Marmot, M., Allen, J., Goldblatt, P., Herd, E., & Morrison, J. (2020). Build back fairer: The COVID-19 Marmot review. The pandemic, socioeconomic and health inequalities in England. Institute of Health Equity.

27. Marmot, M., Friel, S., Bell, R., Houweling, T. A. J., & Taylor, S. (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. The Lancet, 372(9650), 1661-1669.

28. Patel, K., et al. (2018). Community-based dental education programs and their effectiveness. Community Dental Health, 35(4), 297-305.

29. Petersen, P. E. (2003). The world oral health report 2003: Continuous improvement of oral health in the 21st century – The approach of the WHO Global Oral Health Programme. Community Dentistry and Oral Epidemiology, 31(Suppl 1), 3-23.

30. Raphael, D. (2011). Social determinants of health: Canadian perspectives. Canadian Scholars' Press.

31. Smith, A., et al. (2020). The impact of patient education on oral hygiene compliance: A systematic review.Journal of Dental Research, 99(6), 567-576.

32. Thaler, R. H., & Sunstein, C. R. (2008). Nudge: Improving decisions about health, wealth, and happiness. Yale University Press.

33. Turner, R., et al. (2018). Factors influencing patient adherence to oral hygiene practices: A comprehensive review. International Journal of Oral Science, 10(1), 10-18.

34. Warne, D., & Frizzell, L. B. (2014). Aboriginal health research in Canada: Critical reflections. International Journal of Indigenous Health, 10(1), 80-95.

35. Wilkinson, R. G., & Marmot, M. (Eds.). (2003). Social determinants of health: The solid facts. World Health Organization.

36. Williams, D., et al. (2017). The role of tailored patient education in dental practice. Dental Clinics of North America, 61(4), 713-728.

37. World Health Organization. (2008). Commission on social determinants of health: Closing the gap in a generation: Health equity through action on the social determinants of health. World Health Organization.

38. Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). Low health literacy and health outcomes: An updated systematic review. Annals of Internal Medicine, 155(2), 97-107.

39. Garcia, M., & Lee, S. (2016). The use of digital tools in improving oral hygiene: A meta-analysis. Oral Health and Preventive Dentistry, 14(5), 365-374.

40. Jackson, R. J., & Kochtitzky, C. S. (2001). Creating a healthy environment: The impact of the built environment on public health. National Center for Environmental Health, Centers for Disease Control and Prevention.