

JANUARY 2024

Trends

FOOD & NUTRITION TRENDS FOR EDUCATION & HEALTH PROFESSIONALS

MULTIPLE CHALLENGES TO CHILDREN'S HEALTH

IMPACTS OF AN AGING POPULATION

FULL-FAT DAIRY BENEFITS OVERALL HEALTH

ARTIFICIAL INTELLIGENCE IN HEALTHCARE AND EDUCATION



**Dairy Council
of California®**



Dairy Council of California®

Dairy Council of California is a nutrition organization working together with champions to elevate the health of children and communities through lifelong healthy eating patterns. Focusing on education and advocacy, dairy agricultural literacy and collaboration, we advance the health benefits of milk and dairy foods as part of the solution to achieving nutrition security and sustainable food systems.

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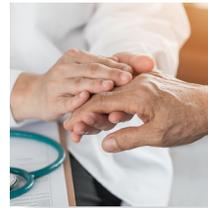
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Meeting Challenges with Creative Solutions and Partnership

The challenges posed by rising rates of chronic disease, gaps in nutrition security and climate disasters have intensified alongside major social, political and environmental events of the past few years. Viewing these interrelated issues through the lens of nutrition equity and seeking creative solutions to meet the diverse nutrient needs of people at all life stages is vital for the success and health of communities, both at home and throughout the world.

Dairy Council of California's *2024 Food and Nutrition Trends for Education and Health Professionals* highlights timely, relevant topics and provides implications for how these issues could affect nutrition education, food and agricultural literacy and food access. Considering issues, anticipating the future and working in partnership with professionals in education and health care settings are key to managing and improving the health of individuals, families and communities.

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Trend 1

A growing child health crisis requires urgent action to support the physical and mental health of children at home and in school.



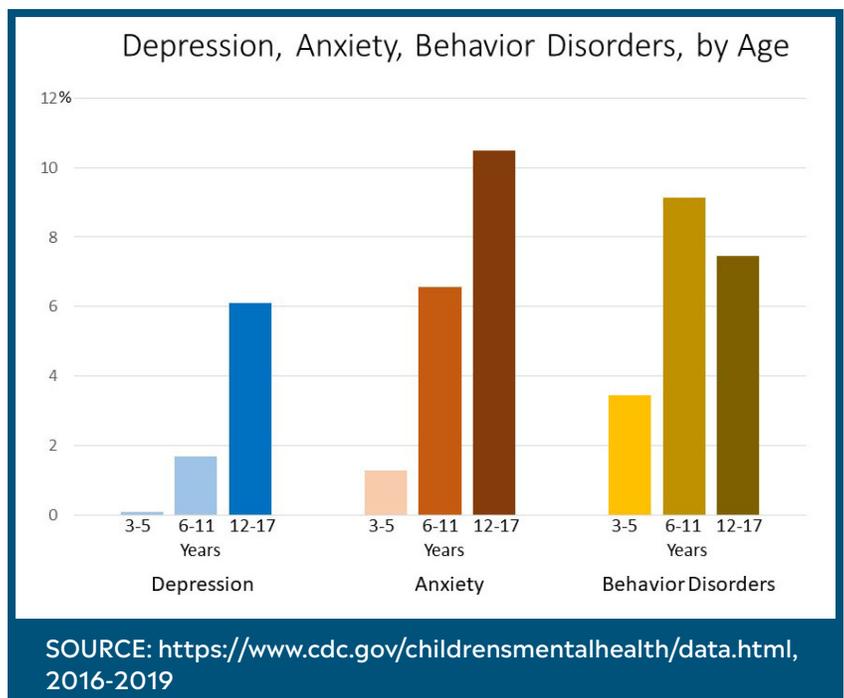
Rising rates of childhood obesity and a growing mental health crisis could have major implications for future health outcomes.¹ Childhood obesity increases both metabolic and cardiovascular risk factors, with links to type 2 diabetes and hypertension (high blood pressure). Lifestyle interventions that address multiple targets, including physical activity, nutrition, mental health and wellness in both home and school settings are needed to improve future health outcomes for children.² In the face of rising obesity rates, research shows that body

dissatisfaction among adolescents is linked to increased social media use.³ Other research shows that some adolescents' perceptions of healthy body weight are changing, with fewer adolescents viewing themselves as overweight.⁴ A range of perceptions of body weight among children and adolescents could diminish the important role of healthy eating and physical activity.

Health professionals continue to recommend treating obesity in children and adolescents, and this treatment is associated with the highest amount of medical spending for these age groups.⁵ Since the American Academy of Pediatrics' 2019 policy statement that highlighted the need for increased access to metabolic and bariatric surgery, there has been an increase in kids' bariatric surgery overall and for each ethnic subgroup.⁶ Meanwhile, preliminary research shows that semaglutide, a medication used for the treatment of type 2 diabetes and long-term weight management, is effective in reducing BMI in adolescents who use it in combination with lifestyle interventions.⁷



Mental health is increasingly viewed as a defining public health issue for the current generation of youth. The American Medical Association adopted a policy that recognizes children’s mental health and barriers to care as a national emergency.⁸ The U.S. Surgeon General identifies the following as drivers of the mental health crisis: social media, loneliness and isolation, lack of community engagement, trauma and global challenges such as climate change, gun violence, racism, political polarization and economic instability.⁹ Females ages 13 to 18 experienced immediate mental health impacts at a higher rate than their male counterparts during the pandemic.¹⁰ Research that included 63,181 participants from 16 countries found that 22% of children and adolescents showed signs of disordered eating, with a higher proportion among girls, older adolescents and those with a higher BMI.¹¹ Disordered eating may include symptoms and behaviors present in an eating disorder, both of which have a strong correlation to mental health, which highlights the interrelated nature of physical and mental health.





IMPLICATIONS

- Diet and lifestyle modifications continue to be the most recommended strategies for obesity prevention. Improving access to nutritious food and physical activity before recommending other interventions should be a priority for health professionals.
- Equipping families with nutrition education and nutrient-dense food can support children's health at home. Providing health care professionals with training and/or resources that help them educate patients and refer to registered dietitians and counselors is critical. Food is Medicine programs can be part of the solution.
- Understanding and meeting the physical, social and emotional needs of children is imperative in both academic and health care settings. Early intervention through prekindergarten programs could be part of the solution, as well as multicomponent nutrition programs that support the whole child and family.
- The school environment is a key place to address lifestyle changes since children spend considerable time there. Access to nutrient-dense foods through school breakfast and lunch programs, as well as nutrition education, can help improve children and adolescents' eating patterns by increasing intake of fruits, vegetables and dairy foods.



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Trend 2

Society is beginning to navigate the impacts of an aging population, whose needs and preferences will change the health care environment, economy, workforce, consumer landscape and family dynamics.

The trend of population aging has long been predicted, but is now a reality.¹² The U.S. Census Bureau reports that the number of persons ages 65 and older will reach 80.8 million by 2040 (up from 54.1 million in 2019),¹³ and the 85 and older population is projected to more than double to 14.4 million by 2040 (up from 6.6 million in 2019). Demographic shifts impact nearly every aspect of society, from jobs and health care to family support and long-term care. An older workforce could lead to higher labor costs such as salaries, health insurance and other benefits, while companies may need to rethink benefits packages to hire and retain staff.¹⁴ Additionally, more than 24 million adults in the United States will need long-term care by 2030, which is double the current need.¹⁵ Most older adults have at least one chronic health condition, and high health care costs and lack of access to services make it harder for them to receive adequate care.¹⁶ The significant growth of the older adult population will impact families and test the health care system and its capacity to address increasing rates of disease and health disparities.

2016 estimate of California's population

Less than 18	18-24	25-64	Over 65
9.3 million	4.2	20.4	5.5

2060 projection

9.2	4.4	24	13.5
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SOURCE: <https://www.latimes.com/projects/la-pol-ca-next-california-demographics/>

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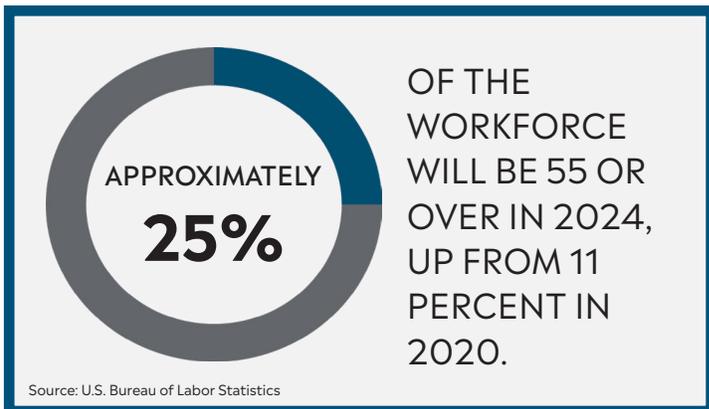
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The growth of the older adult population may contribute to a rapid rise in type 2 diabetes cases,¹⁷ as well as millions of older cancer patients. The National Cancer Institute projects that by 2040 nearly three-quarters of people living with cancer will be over the age of 65.¹⁸ In addition to chronic diseases, older adults have increased health risks related to cognition.



Nutrition can play a key role in managing disease and maintaining quality of life. The advancement of Food is Medicine interventions such as produce prescription programs and medically tailored groceries and meals creates new opportunities to nourish aging adults. Newly published research investigated the association between dairy intake and risk of incident dementia in older adults and found that, compared to non-consumers of milk, those who drank milk one to two times a month showed a lower risk of incident dementia. The research also found that daily yogurt

consumers had a reduced risk for dementia and that yogurt intake might be inversely associated with dementia risk.¹⁹ Overall, there is evidence suggesting that dietary patterns with higher variety may reduce the risk of dementia in older adults.²⁰ However, more high-quality research is needed.

The older adult population will also have a significant impact as consumers. The International Food Information Council's 2023 Food and Health Survey found that older generations are more likely to seek out products that are low in sugar and sodium, to buy foods for heart health, and to mention recyclable packaging as an indicator of sustainability. Older consumers should not be discounted when it comes to food trends; although they may be slower to adopt, their affinity for new trends is higher than younger generations.²¹ A growing older adult population will require companies to understand this audience more than ever.





IMPLICATIONS

- Counseling and resources from health professionals like doctors, nurses, social workers and more that work with older adults can help prepare families for healthy aging.
- Older adults have unique health and nutrition needs, thus education to support healthy aging through nutrition is critical. Dairy foods have established benefits on conditions such as osteoporosis and frailty, and emerging science shows that certain dairy foods may also reduce risk of dementia.
- A key strategy of the 2022 White House Conference on Hunger, Nutrition and Health includes Food is Medicine programs, which may soon be an integral part of the health care system. Food is Medicine interventions can support healthy aging with a variety of curated foods, including dairy, that are both culturally relevant and nutrient dense.

17. GBD 2021 Diabetes Collaborators. Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: a systematic analysis for the Global Burden of Disease Study 2021. *The Lancet*. 2023;402(10397):203-234. DOI:10.1016/S0140-6736(23)01301-6

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Concern about climate change and slow progress toward global sustainability goals highlight the need for innovative solutions to address the intersecting challenges of climate, food insecurity and food systems.

People are concerned about the environment and have a range of emotions and reactions to climate change. In a survey of U.S. adults, respondents across all age groups, income brackets and geographic regions agree that climate change is one of the most pressing issues facing society. Consumers also report dissatisfaction with businesses' commitment to tackling climate challenges.²² The United Nations reports that the world is moving quickly toward the point where systems can no longer manage risk or function as expected.²³ At the same time, the intersecting challenges of malnutrition, food and nutrition security, and chronic disease remain.

On an international level, the United Nations' 2030 Agenda for Sustainable Development reported that the world is not on track to achieve its Sustainable Development Goals by 2030.²⁴ These 17 interconnected goals address the health, justice and prosperity of both people and planet. The update referred to the importance of different sectors working together to build resilient systems in the face of complex, interconnected global challenges.²⁵ In California, where water is a top concern for farmers and ranchers, the state is working to improve access to clean drinking water in many rural communities.²⁶ Increasing access to drinkable water can have many benefits for communities, including helping reduce consumption of sugar-sweetened beverages, which are often used as a replacement for water.

Communities are working toward solutions; in the Central Valley, dairy farmers work with other farmers, food processors, manufacturers and cities, to help people living in rural areas have access to free well testing and replacement drinking water, while also developing plans for long-term solutions.²⁷

Water for All

Learn how farmers are helping ensure clean drinking water in rural communities.

PLANET-SMART DAIRY

SOURCE: <https://www.dairycares.com/post/farmers-helping-ensure-clean-drinking-water-for-all-while-innovating-to-improve-long-term-outcomes>

22. 3BL. New research reveals that as interest in sustainability rises, so does skepticism of business. CSR Wire website. Published March 30, 2023. Accessed November 15, 2023. https://www.csrwire.com/press_releases/770211-new-research-reveals-interest-sustainability-rises-so-does-skepticism

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Ending hunger and promoting health are key sustainability goals, and countries across the world continue the work of incorporating sustainability into nutrition policy and guidelines. Food availability, access and affordability varies widely by region, and nutrition guidelines need to account for health, environment, culture and economy.²⁸ It is important for countries to measure tradeoffs when determining the sustainability of food sources and local food systems, while supporting healthy, culturally appropriate dietary patterns. For example, although there are environmental trade-offs associated with milk production of varying degrees depending on local production, milk provides a unique package of critical nutrients that contributes to nutrition security. In terms of nutrient-to-calorie ratio, milk ranks high for numerous amino acids, phosphorus, calcium and riboflavin. Ongoing efforts to reduce the environmental impact of milk production are improving its use for feeding the global population.²⁹ This example demonstrates the complexity of incorporating sustainability into nutrition policy and the need for approaches that meet the needs of the local food system.



SOURCE: Agri-Pulse, <https://www.dairycare.com/post/farmers-helping-ensure-clean-drinking-water-for-all-while-innovating-to-improve-long-term-outcomes>



SOURCE: California Department of Food and Agriculture, <https://www.cdfa.ca.gov/agvision/>

IMPLICATIONS

- Climate impacts have moved from theoretical to personal. Consumers want to choose sustainable food options but are confused about how to do so. However, nutrition policy about sustainability is evolving, and continued consumer education is a critical first step in understanding how personal choices impact the environment.
- Discussions and actions to create a more sustainable global food system must address the intersecting challenges of climate, food insecurity and food systems. There is not a one-size-fits-all approach to healthful dietary patterns that suits the needs of diverse populations.
- Improving people's access to nutrient-dense, affordable foods is imperative. Dairy foods support nutrition security as they provide a unique package of nutrients to help meet the needs of a growing population.

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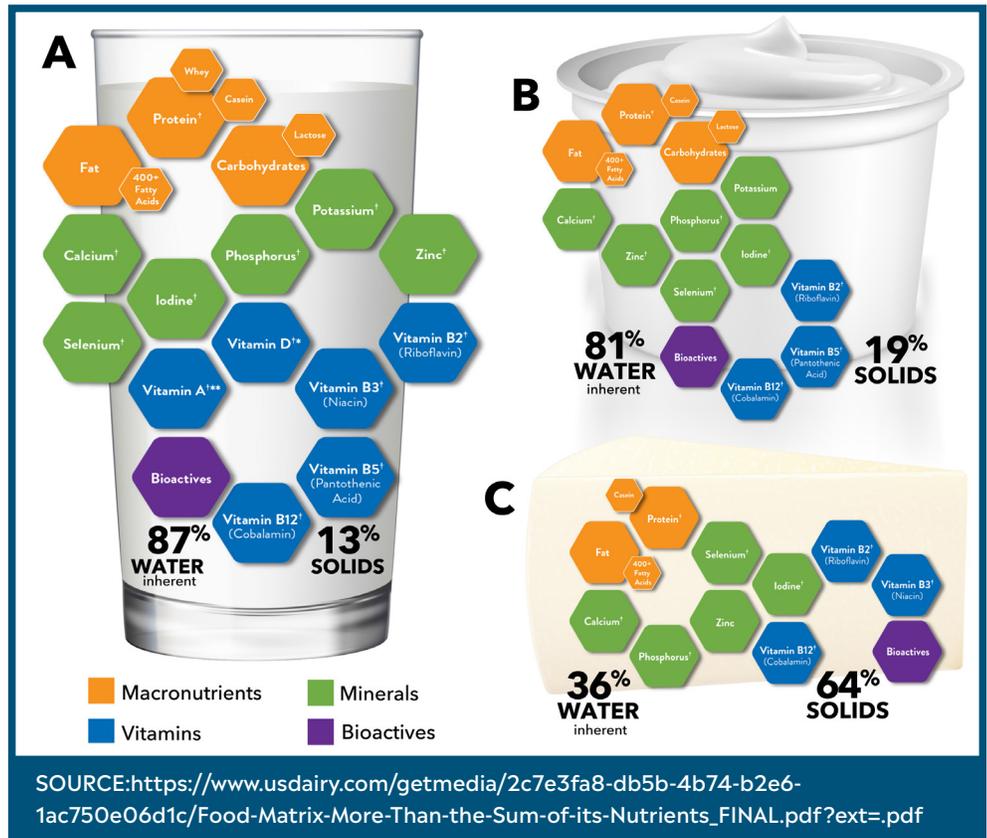
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Whole milk and dairy foods continue to show positive impacts on chronic diseases, the gut microbiome, nutrition security and overall health.

Advancing research validates the benefits of full-fat dairy and its positive impact on chronic diseases. Dietary patterns higher in fruit, vegetables, legumes, nuts, fish and whole-fat dairy have been associated with reduced risk of cardiovascular disease.³⁰ The association is especially true in countries with lower income where consumption of these foods is low. A recent large cohort study looked at the relationship between dairy consumption, including different types of dairy products, and risk of type 2 diabetes.³¹ Protective associations were found for high-fat dairy types, whereas neutral associations were seen for low-fat dairy types. Current science suggests that eating moderate amounts of dairy foods has no detrimental effect on health,³² and full-fat dairy foods may have positive effects on cardiometabolic health, depending on an individual's overall health.³³

Dairy foods have benefits beyond the nutrients they contain. Diet plays a significant role in the establishment and maintenance of healthy gut microbes. Fermented dairy foods, particularly yogurt, can positively affect gut health. Research has also found that consuming fermented dairy helps reduce markers of inflammation.^{34,35} As research demonstrating the health benefits of dairy foods advances, focus on lactose intolerance is increasing. Certain populations, specifically people of South American, Asian and/or African descent, tend to develop lactase deficiency, which may lead to avoiding milk and dairy products. New research found that administering probiotics was effective at reducing lactose intolerance in adults.³⁶



31. Slurink IA, Chen L, Magliano DJ, Kupper N, Smeets T, Soedamah-Muthu SS. Dairy product consumption and incident prediabetes in the Australian Diabetes, Obesity, and Lifestyle Study with 12 years of follow-up. *J Nutr.* 2023;153(6):1742-1752. DOI:10.1016/j.tjn.2023.03.032
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Food is Medicine interventions are increasingly viewed as an important solution to improving nutrition security and addressing health inequities often seen in under-resourced communities. Dairy foods play an important role in federal nutrition security programs like the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Supplemental Nutrition Assistance Program (SNAP), and school meal programs, which are key food-based nutrition interventions in the Food is Medicine framework.³⁷ The National School Lunch Program has been found to help improve diet quality, food security and possibly academic performance. The adoption and success of universal meal programs in California, Minnesota, New Mexico, Colorado, Vermont, Michigan, Maine and Massachusetts is a positive step toward achieving nutrition security for children. The ongoing expansion of Food is Medicine interventions such as medically tailored groceries/meals and produce prescriptions will give more people access to nutrient-dense foods that support their individual needs.



School meal served in San Diego Unified School District cafeteria setting.

IMPLICATIONS

- The 2020–2025 Dietary Guidelines for Americans recommends low-fat and fat-free dairy foods. Future dietary guidelines should include dairy products at all fat levels to help ensure the guidelines support health and provide options for honoring cultural foodways and personal preferences.
- Educators and health professionals can continue to teach about the importance of including a variety of dairy foods in diverse dietary patterns and nutrition programs, as well as seek to understand other beverage preferences to more effectively tailor messages for patients.
- Ongoing research to understand the connection between probiotics and lactose intolerance could lead to more effective dietary interventions in the future.
- Though fruits and vegetables are the primary focus of many Food is Medicine programs, adding a variety of dairy foods, including fermented products, to these programs could help meet the nutrient needs and preferences of diverse populations.
- As a part of interventions like medically tailored meals and food prescriptions that are being piloted for medical reimbursement, dairy can support optimal nutrition to improve health, lower health care costs and address food insecurity.

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35. Nieman KM, Anderson BD, Cifelli CJ. The effects of dairy product and dairy protein intake on inflammation: a systematic review of the literature. *J Am Coll Nutr*. 2021;40(6):571-582. DOI: 10.1080/07315724.2020.1800532

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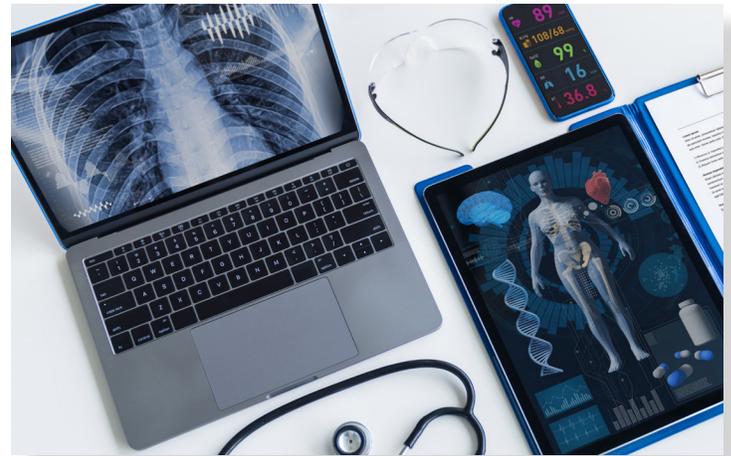
37. Deuman KA, Callahan EA, Wang L, Mozaffarian D. *True Cost of Food: Food is Medicine Case Study*. Food is Medicine Institute, Friedman School, Tufts University; 2023. Accessed November 15, 2023. https://tuftsfoodismedicine.org/wp-content/uploads/2023/10/Tufts_True_Cost_of_FIM_Case_Study_Oct_2023.pdf

Trend 5

The health care and education sectors are adapting to rapid advances in artificial intelligence technology as government and industry organizations begin to develop guidelines for its implementation.

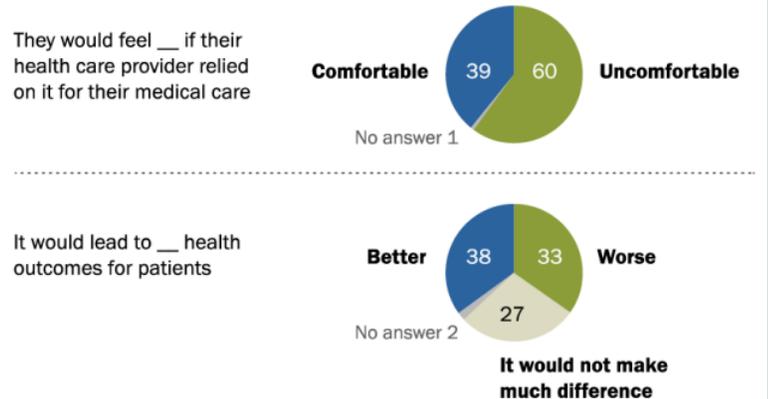
Artificial intelligence (AI) is a field of study that combines the intelligence of machines and data to solve problems. Though the field is not new it is advancing at a rapid pace and is a topic of increasing interest. The education field is adapting to the challenges and potential of AI; however, new and innovative applications with little regulation mean both uncertainty and opportunity. One example is the launch of the AI system ChatGPT in 2022, which brought widespread fears about plagiarism and cheating. Those fears are beginning to subside as educators become more comfortable using the application in their classrooms. Survey data from the Walton Family Foundation found that, of more than 2,000 K-12 students and teachers, one-third of students ages 12 to 17 and 51% of teachers report using ChatGPT for school, with higher usage among Black (69%) and Latino (69%) teachers. Uses for ChatGPT include lesson planning, idea generation and building background knowledge of a topic. Overall, teachers and students who were surveyed say it has had a positive impact.³⁸

In health care settings, 10% of professionals report using AI technologies, and more than 50% plan to use AI in the future for data entry, appointment scheduling, medical research, and diagnosis and treatment. For nutrition professionals, AI applications can support the creation of tailored meal plans, clinical notes, and health education materials, though risks related to issues such as patient privacy and information accuracy remain.³⁹



Fewer than half in U.S. expect artificial intelligence in health and medicine to improve patient outcomes

% of U.S. adults who say that thinking about the use of artificial intelligence in health and medicine to do things like diagnose disease and recommend treatments ...



Source: Survey conducted Dec. 12-18, 2022.
60% of Americans Would Be Uncomfortable With Provider Relying on AI in Their Own Health Care

SOURCE: <https://www.pewresearch.org/science/2023/02/22/60-of-americans-would-be-uncomfortable-with-provider-relying-on-ai-in-their-own-health-care/>

People's attitudes toward AI in health care are mixed, with a Pew Research Center survey reporting that six in 10 adults would feel uncomfortable if their own health care provider used AI to do things like diagnose disease and recommend treatment, and only 38% believe using AI could lead to better outcomes. More positively, 51% believe that bias and unfair treatment would get better with the use of AI.⁴⁰

There is a growing need for regulation to guide the use of AI across sectors. A report from the U.S. Department of Education made seven recommendations for AI in education, including keeping humans in the loop, informing and involving educators, and developing education-specific guidelines and guardrails.⁴² Medical organizations are also giving guidance to support the growth of AI in health care. The American Medical Association created a framework for the development and use of AI that builds on the latest research, viewing AI through the lenses of ethics, evidence and equity.⁴³ The National Academy of Medicine launched a three-year project to develop the Health Care Artificial Intelligence Code of Conduct to help guide the responsible use of AI across health care professions and research.⁴⁴ In California, Gov. Gavin Newsom signed an executive order to prepare California for the progress of AI. California is home to 35 of the world's top 50 AI companies as well as world-leading academic research institutions and the report will help ensure the state remains a leader in AI.⁴⁵ As the technology advances, policies and guidelines that will shape the adoption of AI in the education and health care settings and beyond will need to be continuously updated and improved.



IMPLICATIONS

- Many industries are in the early stages of combining human intelligence with AI for efficiency and advancement. Determining ways to effectively use AI in health care and education settings will be essential.
- Data is essential for AI technologies, and there's an ongoing need to focus on finding ways to share data so that it is usable, actionable and reliable.
- AI may be useful for brainstorming and generating ideas. Moving forward, researchers and developers need to train and test AI to avoid misinterpreting science and misleading the public.

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