# The Role and Effectiveness of Narrative Medicine and Visual Arts Training on Emotional and Interpersonal Skills Among Medical Students and Physicians: A systematic Review.

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Dissertação para obtenção do Grau de Mestre em

**MEDICINA**

Mestrado integrado

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Fevereiro de 2025

## Declaração de Integridade

Eu, Maria Beatriz Catarino Pereira, que abaixo assino, estudante com o número de inscrição 49607 de Medicina da Faculdade de Ciências da Saúde, declaro ter desenvolvido o presente trabalho e elaborado o presente texto em total consonância com o **Código de Integridades da Universidade da Beira Interior**.

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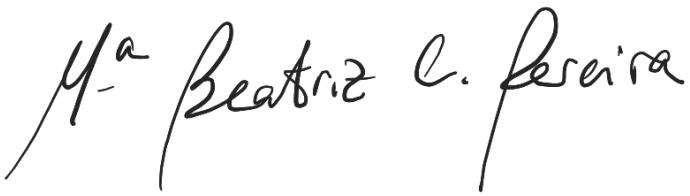
Universidade da Beira Interior, Covilhã 25/ 02 / 2025



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CHAVE MÓVEL

# Dedicated to...

The heartbeat of my existence,

The anchors of my life's meaning,

The reason my days find some purpose,

The stars that illuminate my darkest nights (and days),

The rack-and-pinion steering system directing every turn I make :)

The ones who held me steady through every single one of my falls,

The hearts that carried me (and still do) when I was too weak to stand,

The constant figures I'd find whenever I looked back, shielding me in every way,

The unwavering grace that held me through the chaos and storms, even as they silently endured a pain as deep, or deeper, than my own,

The air that I breathe,

My parents.

And my brother.

# Acknowledgments

First of all, I would like to express my deepest gratitude to my thesis coordinator:

**Dr. Margarida Lobo Antunes**. Not only for accepting to embark on this journey with me and for all her invaluable help, but also for giving me hope on days when it was hard to find. I had the idea and motivation, but I never truly believed it would materialize for multiple reasons. By accepting to be part of this project, she reminded me to always try—that there is nothing to lose and that I might just be positively surprised, as was the case here. I am also immensely grateful to her for introducing me, in such an inspiring way, to the world of narrative medicine. This ignited my curiosity, making me want to learn more and eventually led me to choose it as my thesis topic, even though I knew it was still stigmatized by many. She gave me the courage to pursue something I deeply believed in rather than settling for an easier path. For all of this, my deepest appreciation and gratitude.

Secondly, I would like to thank **Professor Miguel Castelo Branco**, who kindly accepted to be my co-coordinator. But my gratitude goes beyond that. As someone important to me at this university once said, I am a "lost parachutist," and since I arrived here two and a half years ago, Professor Miguel has always been there for me whenever I needed support—despite being an incredibly, incredibly, incredibly busy person. Thank you for guiding me through this not-so-easy journey and, in doing so, making it easier.

At this point, I should also apologize for my persistent "persecutions" every time I needed to speak with you and for all those times I walked beside you from one point to another just to squeeze in a conversation. Sorry for not even allowing you some silence and peace during those moments!

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Now, I would like to thank those who listened to my unconventional idea for the preface and not only approved it (even though I thought they wouldn't—but that's clearly an issue for me) but also provided their feedback and insights promptly, making the final result something I truly love:

**To Dr. Filipe Cardoso Silva**,

My deepest gratitude for your brief yet so powerful and meaningful words, offering a psychotherapist's perspective on the role of narrative medicine and art training in the medical field. For this, and for so much more - things I could never fully measure—I sincerely thank you.

**To Professor Ana Rita Bustorff,**

Words are not enough to express my gratitude towards you. For everything in reality, more precisely for all your help during this path and finally for sharing your perspective as a literature scholar on the impact of words and storytelling and on human emotions.

From the bottom of my heart, I thank you.

(Even though my heart comes with extra tunnels, it is still an honest one!) 😊

**To Alexandra Maló,**

A few years ago, at her first art exhibition, I saw a painting that evoked something in me that I cannot describe—both psychologically and, in a way, even physically, perhaps in a psychosomatic way. I remember standing in front of that painting, lost in thought, when my father approached me. We stood together, discussing our interpretations of what we saw and reflecting on its meaning.

Being an abstract piece, the fact that it could provoke such strong emotions is proof of how deeply art makes us feel. The most curious part of this experience was that my perception of the painting was the complete opposite of my father's. I believe this had a lot to do with our personalities and states of mind at the time. This conversation and reflection had only positive impacts on us, serving as a living example of what this thesis also seeks to explore.

So, my gratitude to Alexandra goes beyond her generosity and kindness in accepting my request to share her thoughts as an artist. I thank her not only for this incredible gesture of compassion but also for indirectly providing me with a truly special father-daughter moment—one that I will cherish forever.

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**To Professor Abel García Abejas,**

I must also express my gratitude to you, because if it weren't for you, I would have never taken the class that first inspired me to learn more about narrative medicine—eventually leading me to choose it as the subject of this dissertation. In that sense, one could say that without you, this project wouldn't have come to life.

Thank you for introducing me to this side of medicine and for being such a positive force in the change that needs to happen. This year, I had the chance to see the work produced in your Arts of Medicine class, and it was truly impressive. Having that course in the curriculum is a privilege—one that students may only fully appreciate later in their careers, but one that will undoubtedly shape their perspectives.

**To Professor Graça Gabriel**,

I must express my deepest gratitude for your kindness and altruism. You had no obligation whatsoever to help me, yet you took time out of your busy schedule to sit with me—for hours—patiently guiding me through the basics of what a systematic review is. I was completely lost, and you were the light that started to guide me until I finally found my way in the world of SRs.

For your generosity, patience, and willingness to help, I sincerely thank you. You are the kind of person this world needs more of!

**To Mr. João Fitas, Master in Engineering,**

This is both a professional and personal acknowledgment.

Thank you for all your help and infinite patience in trying to teach me how to properly format a Word document. You *did try*... but, unfortunately, *you failed*.
Still, it's the effort that counts! It remains an impossible mission for me, so be ready—I'm definitely going to need you again sometime!

Not just for Word or other computer-related rescue missions, but most importantly for all the other challenges and adventures we've had and especially the ones still ahead of us—Many, I hope.

I'm grateful to you for so many things, and *obviously*, you are equally—if not even more—thankful for me. *Obviously*. But there's one very important thing I have to mention here.

I am *100% not grateful* for your body conditioner. Just thinking about it makes me freeze.
A warning would have been the bare minimum! Either way, I forgive you—because we still have too many things to do together, so I must force myself to forget that traumatic experience. ;)

Finally, thank you so much for your invaluable help and patience.

And yes, I forgive you for singing 378 different songs while we were trying to work.

Last but definitely not least,

Thank for the day you decided to throw flip-flops towards a washing machine in a random room we got locked in, somewhere in United Kingdom.

This was 11 years ago.

And we've been friends, in the true meaning of the word, ever since.

**To Dr. Marta Duarte**,

I must also extend my gratitude to you. Even though there was no direct impact on my work, if it weren't for you, I wouldn't have had the courage to go for it—to do what I believed was the best choice, even when it wasn't the easiest one. Thank you, Marta, for insisting. It was worth it.

And thank you also… well… for everything. Two and a half years have passed since this lost kid landed here so abruptly, and you have always been there for me. You understood me, and you also gave me the privilege of understanding a bit of you.

My gratitude is endless because some things are simply priceless. All I can do is thank you and let you know that I'll be here if you ever need me.

Last but not least…and not at all…

**To Dr. Maria João Lima**,

The first person to catch the fallen parachute soldier… The first impact in such an emotional period. It had to be you. And even though I don't usually believe in destiny or fate, I'll make an exception this time. You will always be a defining mark in my life and in my family's—a turning point they had wished for so much.

Thank you for always being there. Not only do I thank you, but I also owe you an apology, because I'm pretty sure I must be one of the most annoying students you have to deal with. Thank you for showing me where to go when I was lost. Thank you for all the help, for listening to me, and for holding onto me every time I needed it—once, quite literally. Sorry for the scare. Passing out that day was really not part of the plan!

Thank you for taking care of me.

It means the world to me, and I will never forget it.
And finally, I would also like to extend my gratitude to everyone who, even in the smallest way, contributed to this process. Your help did not go unnoticed, and for what it's worth, I am here for you whenever I can be of help in return.

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**To my parents,**

I will never, ever be able to repay everything you have done for me. Not only do I thank you with every single part of my being, but I must also apologize. This path has not been an easy one, yet you, mom and dad, were always—always—there when I needed, guiding me when I was lost and accepting my decisions even when you weren't so sure they would be the right ones.

You let me walk alone and independently, yet you made sure I always knew that every time I looked back, you would be there, making sure I was okay. And that, well…That is probably the best feeling one can have —the comfort and safety of knowing that even when I'm alone, I will never truly be. Knowing that in the blink of an eye, you go from walking behind me to walking beside me, and that's something I never want to lose.

I want to know that wherever life takes me, whenever I turn my head and look back, you'll be there—hopefully smiling—and that in a second, we'll be together, facing whatever comes our way.

I thank you for allowing me to keep getting back up every time I fell and for pulling me up when I didn't have the strength to do it by myself. I am the luckiest kiddo in the world to have you as my parents. It is the biggest privilege I have. My childhood was a dream, and when things started to get a bit darker as I grew older, you gave me every opportunity…And even more.

I've always believed that you deserved a better daughter, even though I know you would never agree. Since changing that isn't possible, the only thing I can do—and that I try to do every single day—is make it all worth it. Everything I do is, and will always be, for you. I hope that in some way, I have made you proud.

But above all, I hope I have made you happy.

*Individually speaking*.

**To my mother, mãe**,

You are the biggest certainty of my life. Thank you for never, ever making me doubt of your love and for showing it again and again and again, as many times as needed—because that's just what you do. Thank you for always being the one I could talk to about everything even if it meant you would suffer for me as well. Thank you also for every time that I doubted thing would work for saying *"e se correr bem?"* reminding me that things working out was actually possible.

You are always there with open arms, ready to let me sit on your lap, hold me and hug me tight and warm - even though I clearly don't fit there anymore and the logistics are a bit harder than when I was younger. But you make it work because… well, because you're you. My mother.

Thank you for grabbing me and not letting me fall so many times. And for learning how to deal with things that maybe you never expected you would have to face—but you did, and you never questioned it. When needed (and there were so many times) you were always there letting me know that things would be ok, that we would find a way. For this, and for everything else, I thank you deeply. You are, and always will be, the most certain part of my life.

**To my father**,

The definition of unconditional love in human form. The one who will always be there when needed. I hope you know how much I still need you… and always will.

My father is what I have come to understand as my soulmate. We don't need many words—we just know. And even though he doesn't believe it, he is my role model. I hope that someday I can be at least half as what he has become and as kindhearted as he is.

He came from not much and achieved the world. He has the most generous heart I know, and I only wish that one day he can see himself the way I see him. Maybe he hopes the same for me. Perhaps that's just the soulmate thing.

Never, ever forget that I am, and will always, proudly be, your Besnica.

Thank you for always giving me every opportunity and more. But most importantly, thank you for teaching me what true, unconditional love and dedication are.

**To my brother,**

Some people say their siblings are their best friends. Well, mine is *not*.

For me, being a brother or a sister is something of an entirely different dimension.
My brother is not my best friend—he is *my brother*. And I am the luckiest sister to have him.

Thank you for always being there for me, for making sure I know I matter to you, and for your unwavering, unbeatable faith in me and my worth. From playing football in the backyard to the so called "*grown-up life"*, you have always been the person I could turn to. N

Unless, of course, my arm was out of place—because then your expert medical advice would confidently be: *"Maria, don't worry, if it hurts, it's not broken."* So yeah… thank you for *everything*—everything except orthopedic emergencies.
Thank you for being the person I trust the most, for always supporting me, for being open and willing to always talk to me about the simplest to the deepest and sometimes toughest things in life. Thank you for always being there for me, *24/7*.

Thank you for making my childhood *so* much better and my so-called adulthood a safe place.

After everything? It's you and me—just us two against the world. And that's something no one can ever take from us.
All I am and all I have is yours as well, and I will *always* be here for you—no matter what.

Even if that means talking to you in our unique love language: you being super nice and cute (blah), and me responding by being *incredibly* rude. If this is not fraternal love, I really don't know what is. And yes, I forgive you for making me watch drangonball or play fifa. I don't forgive you though for talking in the morning, or making noise, or even breathing. No no no, It's 7am it's *shhhhhh* time. So don't you dare or I won't be able to promise your physical integrity remains the same. But now, for real…DON'T TALK TO ME IN THE MORNING!!!
Ok, now it's really for real. I love you and I'll always be there in a breath every time you need me.

Thank you, *Mano*.

Thank you for being my brother—which already says *everything*.

**To Bia,** Bibocas, bebé, bebecas, meu franganote, coisa linda, amor da doninha and so on,
Thank you for your warmth and love.

**To my uncle**,

The one who taught me how to ride a bike and lifted me every time I fell—both literally and figuratively.

Thank you for being my uncle. I hope, in some way, that you're proud of me and happy to have me as your favorite niece. (And no, the fact that I'm your only niece is completely irrelevant. Thought so too.)

I can't express how grateful I am to have what we have now. It has brought me so much joy, and even in tougher times, we always find a way to make things feel a little lighter—mostly through dark humor. And you can always count on me for that.

But in all seriousness, I could have never imagined that we'd be where we are now. And except for one teeny, tiny detail that we'll face together, I wouldn't change a thing—because being your niece is one of the few things that truly makes me happy these days.

Thank you for all your help, for the moments we've butted heads (maybe they were necessary), for everything you've taught me and continue to teach me. But most of all, thank you for making me believe that you love me.

(And not just because I'm the best orange grabber you'll ever find—but also that, of course.)

I love you, and I'm here. Not going anywhere.

**To my 92 years old grandmother**,

The strongest person I know—in every possible way.

I bet that while I'm writing this, she's either climbing a tree or digging holes in the soil with her "*enxada*", making sure everything is ready for when the moon is in the right phase to plant an industrial amount of cabbages, potatoes, pumpkins, zucchini, and more—only to then insist that we, WE, have to eat it all. Well, I suppose that's just what grandmas do. But seriously, mine is on another level. :)

My grandmother has always been there for me. She's the one who took care of me when I was sick—I have such a clear image of those days. Mom would leave me at her place in the morning, and even though I was supposedly ill, that never stopped me from following her everywhere, step by step. Now that I think about it, that must have been super annoying… sorry. But I just wanted to be with you, which I'm pretty sure makes up for it.

Those days would get even better at lunchtime when my grandpa would come back from work, and—surprise, surprise—his favorite granddaughter was there! Such happy memories…

But that was a lifetime ago. My grandpa isn't around anymore, but she is. And every time things got tough, she believed in me and motivated me.

At a moment when even I didn't know what to do, she had no doubts. She just said, Go! Just like that. She always pushed me forward, and maybe I wouldn't be here now if she hadn't, at a time when not much else was pushing me forward.

She cares so deeply for me, and sometimes I feel bad because all I want is for her to be okay—to live as many more years as possible, because she truly loves to be here. But damn, she does some crazy things sometimes.

*"No, it's not okay to use that super old ladder to grab one last olive from the tree! What if you fall?"*

And then she looks at me and says:

*"My love, whenever I climb something, falling is never part of the plan."*

Which, of course, just makes me even angrier. But that's love.

Vó, I'm sorry for worrying you so much these past few years. I never meant to (obviously), but you don't have to take care of me anymore. Now it's my turn to take care of you. And if you even think about saying you've had a better driver, helper, or medical appointment companion, I'll be mad!

But you wouldn't. I know it because, just like you said recently (when I was rambling about something probably irrelevant), "I chose you, Beatriz, and I chose well, didn't I?"

I hope you did.
I'm here for everything. I love you, and I hope you still have many happy years ahead of you—because I know how much you love life, and how rare it is to have that passion and will at your age.
Thank you, Vó.

I love you forever.

**To my grandfather,**

More than 2,000 years ago, the philosopher Plato believed that each of us has an assigned star that guides us throughout our time on Earth. Then, after we die, we return to our companion star to watch the universe unfold from the heavens.

I'm a very skeptical person, but it warms my heart to believe that somewhere, my grandfather is watching over me—and that, in some way, he is proud of my journey and everything I've overcome. Proud of *me*.

I am 100% sure that if we were in the same dimension right now, he would be looking at me with tears in his eyes—not because of what I've accomplished, but just for seeing me and because he was always overwhelmed with love whenever he were together. Because no matter what I did or do, he *would*—and *will*—always love me so deeply.

There was a time when I wasn't so sure about what he would think of me if he was alive. But now, I believe that he is proud of me, proud of his *"filhoquita"*—not necessarily of who I am becoming as a medical professional, but of who I am as a *person*. And I'll hold onto that feeling, picturing the way his eyes would soften with love every time he looked at me.

Some people say I was his special little girl, the love of his life—*"a menina dos olhos do avô."* That fills my heart and gives me strength.

I would like to end this acknowledgment with a verse from one of my favorite poems, "*When Tomorrow Starts Without Me"* by David Romano—even if that *tomorrow* was so long ago.

*Too* Long .

*"So, when tomorrow starts without me,*

*Don't think we're far apart,*

*For every time you think of me,*

*I'm right here, in your heart."*

Avô, eu amo-te e tenho tantas saudades que não é possível pôr em palavras. Espero que sorrias, com a lágrima de alegria no canto do olho, sempre que olhares para mim e por mim.

**To Ana Rita,**

The one who once found me, the real me, and never again let me go.
The one who once was my English teacher but ended up teaching me about life.
The one who knows more about me than most and who, every time I need, is there.

The one who doesn't understand the true meaning of style and insists on mocking my amazing shirts and even more incredible socks. (Jealousy is a very ugly feeling, okay?)

I honestly don't know what has kept you "here" with me after all these years, but all I can be is tremendously grateful. Because you are one of the key people in my life, and I wouldn't have made it through so many moments if it weren't for you.

You have literally saved me—saved my life. And you continue to do so, year after year, with no obligation whatsoever.

I love you like family, as if we shared the same blood, and I will never be able to thank you enough for all the talks, for all the times you found me lying on the ground devastated (both literally and figuratively), and for all the times you lifted me back up.
And still, you keep doing it.

"Thank you" will never be enough for someone who is such an essential part of my being.

So, to you, my deepest gratitude. And if possible—please, never let me go.

**To Hevi,**

For making everything so much better and more joyful, for loving me and believing in me effortlessly.

Life has become brighter with your presence.

Thank you for being my friend and for giving me the privilege of saying that I have *Brazilian family!* I love our connection—how we are so in sync, and how, despite being such different people, we are also so much alike in many ways (*especially since we are clearly the most stylish ones!*).

Your smile, your attitude toward life, and the way you've been there for me from the very beginning mean the world to me. So, to you, I say *thank you*—not only for believing that I can do it and that I *am* enough, but also for insisting on reminding me of it.

It's a gift to have you as someone I can truly call family.

For that, and for everything else—thank you.

**To Manuel,**

Manel, Manecas, Nelinho, Manélio, Nelito, Many and so on…
The most consciously annoying person I met six years ago,
back when this partnership—soon to evolve into a full-fledged corporate empire—began. The Mania Corporate.

The one who sends me at least 37, ten-minute voice messages every day. The one who stresses me out with all his stress—so much so that when he has none, he makes sure to go out and find some "*molho"* just to keep things interesting.

The only person in the world who managed to do the impossible: getting me to speak *Alentejano*. And the fact is, the little pigmeu did it effortlessly.

Thank you for being the one keeping this partnership running—because if it were up to me, we'd probably already be in insolvency. Thank you for insisting, for always making sure things move forward, and for being the one person whose words I already know before you even open your mouth.

Thank you for all our "tropical" subaquatic experiences.

There's so much I'd like to say, but I can't seem to find the right words.
We connect even before connecting. Our frequencies are always in sync, even when I try to turn mine off.

Just like I said before… *"somos bandeira branca em tempos de guerra."*
Thank you for making everything feel lighter, for making me forget everything else—even if it's just because I'm too busy trying not to die from laughing too much. But for real—when we finally get together, those moments feel peaceful. Even if peace is never on the menu, life gets a little easier for a while.

We're just us. And that's so much.

So, thank you, Manecas, for being my partner in crime.

***Long live Mania.***

**To Vani,**

With whom all of this began.

Thank you for so much—for, in just two years, becoming my best friend and for being someone with whom I never had to pretend to be anything other than myself. Thank you for being one of the few people in this world with whom Beatriz can just be Bibs. That is priceless.

Thank you for keeping us us—even after seven years of me leaving that devil land. No matter how much time passes or how far apart we are, we're still just Vani and Bibs. And every time we're together, things feel normal again, like they're finally right.

Thank you for Huggie. I'll miss him for the rest of my life, but I'll never forget the moments we shared. Well… except for that one time when you forced Huggie to be your crime partner and scared me so badly that I swear that's probably when my *foramen ovale* opened. But I forgive you—because I am a very generous person. Very.

Thank you—and thank Lara, who has also become someone I truly cherish. Maybe it's because we are both super cheerful, always rainbows and butterflies' kind of people… but we'll never know!

Thank you both so much—not just for all your help, but most of all for reminding me that sometimes, having friends is actually better than being alone.

I still remember the day I got home after visiting you. At some point, my mom just looked at me and said, "You're smiling… you're smiling again," as if it was the most serious yet positive thing ever. Maybe it was.

So yes—thank you for making me smile.

I love you, and I miss you.

And with that in mind—get ready, cause I'm coming soon!

**To Cat**,

For always being there to help me—but more importantly, for being one of those rare people who make sure others know they are special and that they matter. Most people don't have the courage or bravery to openly compliment others. Not only does she have it, but she does it effortlessly—whether you've known her for two hours or ten years.
She will see the good in you and make sure you see it too. And that is incredibly rare. Maybe it's a moon connection thing.

For that, and for everything else, things that go beyond any kind of measuring,
I thank her.
She says I'm a star person, that I'm like a rainbow. I don't really know about that—but I'll try my best to believe it and trust her. And when I don't, she'll believe for both of us and I'm eternally grateful for that.

So, thank you. Thank **U** for being "*quem se atravessou pra me entender*."

**To Miki,**

The one who stayed—through everything.

The one who always accompanied my journey, just as I proudly accompanied his. Even though there were times when we couldn't be as present for each other, we remained strong and never let this friendship—this true friendship—fade. And so, 12 years later, here we are.

Thank you for all your help through the different stages of this journey. You made a big difference in all of them, and you're probably the only friend I can truly say that about. And even in the tougher moments, when you always approached things with understanding and compassion—never judging, just being there. Just as I hope I have been for you.

From math classes—where you literally said you'd rather get a lower grade (as in, like, 19.9) if it meant helping me understand things better than getting a perfect 20 on the test—to sitting on the steps of *Caleidoscópio*' stairs, where you made me learn the Krebs cycle step by step (steps pun fully intended).

Thank you, Miki.

I'm really proud of you, I love you, and I hope—at least a little bit—that you're proud of me too.

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I could keep going, yes even more, but since it's not possible I would just like to thank the rest of my family (which doesn't really mean blood one – at all). To the ones who where always there for me, the ones who believed in me when they had every reason not to and to the ones who stayed after all the storms and keep on walking beside me in this journey we call life. So, thank you.

Thank you Inês, Bia, Ana, Carlos e Beatriz... I could be here forever...

*To everyone I'm grateful to,*

*My heart is yours.*

# Preface

The connection between literature, art, and medicine—seen through the eyes of those who dedicate their lives to it in their own ways:
A **psychotherapist**, a **literature master**, **an artist**, and **a future doctor** who continues searching for the right path, hoping that, at the end of the day, she will simply be remembered as a kind and generous human being above all else.

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**Filipe Cardoso Silva**,
Psychotherapist – License 284, Order No. 11540884
Master in Psychopathology and Clinical Psychology.

*"O contacto com o mundo emocional de um sujeito em sofrimento é muitas vezes uma experiência traumática, que dói.*
*No entanto, o contacto pela arte, em que as expressões afectivas mais aterradoras podem aparecer sublimadas, muitas vezes pelo impacto estético que a Criação artística imprime, tornam possível pensar, vivenciar, através da Obra, o real inenarrável."*

**Ana Rita Bustorff,**
Degree in literature, languages and foreign civilizations.
Master's in digital technologies and education
Teacher and pedagogical coordinator at Colégio do Bom Sucesso, Lisbon.

*"A literatura é relação, é emoção, é comoção e é identidade. A literatura é a oportunidade em dar significado ao Verbo e em criar algo bom e belo, num gesto altruísta e generoso de quem oferece ao outro o seu dom. Um livro pode conter em si mundos, que se descobrem na partilha de interpretações talvez semelhantes, de análises minuciosas, num faz-de-conta "quase real". Pela literatura, desconhecidos aproximam-se e comungam do prazer de a tratar por tu, ou, timidamente, de a tratar com deferência."*

**Alexandra Maló**
Artist, Painter
Degree from Escola de Belas Artes, Coimbra

*"A pintura, como manifestação artística, é uma ferramenta poderosa para explorar e transformar a experiência humana. Ela influencia não apenas as emoções, mas também o desenvolvimento psicológico, social e cultural, tanto do artista quanto do espectador. Através da pintura, o ser humano encontra um espaço para se expressar, refletir e se conectar com o mundo e consigo mesmo."*

**Maria Beatriz Catarino Pereira,**
A privileged survivor and soon-to-be a privileged survivor medical doctor.

My life has been filled with everything anyone could ever ask for. I have always had everything I needed, everything I *didn't* need, and even more.
To add to that, I have been blessed with the most supportive and loving parents and brother—without whom I could never have done *anything*.
And yet, as we all know—or should know—sometimes, there is something inexplicable that keeps us from fully living a joyful life and embracing the blessings we were given. *Hence, the survivor.*
I have lived and studied in four different cities, and for five years, those were in two different countries. I have attended three different medical schools—and I *hope* this is the last one! Almost ten years have passed since I first started on the path of medicine, and it has been far from easy.
But through it all, there were two things that always helped.
First, the *only* quality I will ever confidently claim: my sense of humor. It has, without a doubt, saved me.
And then, *art*—in all its forms. Because even in the darkest of times, art, in whatever shape it comes to us, has the power to pull us away from the abyss and make life feel just a little bit lighter. A poem, a painting… *all* forms of art. Because to me, art is anything that makes us *feel* something.
That is why I wanted to bring it into medicine—the life I chose—as my last official work in this journey. What draws me to medicine is, and has always been, the fact that it is the one place where I feel I can *do* something worthy, where I can be *useful*. And that is one of the reasons I chose this path.
However, life *cannot* be just about one thing. To be a good doctor, I must first be a *whole and complete* human being—one with interests beyond medicine, one with different perspectives on life. Because in the end, that is what will allow me to understand my patients better, to see them as more than just cases, and to show them true *compassion*—no matter their reality.
And that is, after all, what this dissertation is about: the need to step *outside* the confines of medicine and learn about *life*—so that we may better understand, empathize, and truly *see* the person in front of us.
So, I would like to close this space I reserved for my thoughts with a quote from *Dead Poets Society* that, to me, perfectly sums up this perspective:

*"The human race is filled with passion. And medicine, law, business, engineering—these are noble pursuits and necessary to sustain life. But poetry, beauty, romance, love… these are what we stay alive for."*

# Abstract

**Introduction:** Narrative medicine and visual art analysis are emerging educational approaches to enhance empathy, emotional intelligence, and interpersonal skills in medical students and physicians. Despite their potential benefits, integration into medical curricula remains inconsistent, requiring further evaluation.

Aim: To assess whether training in narrative medicine and visual art analysis improves empathy, communication, and observational skills, ultimately enhancing patient-doctor relationships and healthcare outcomes.

**Methods:** Following PRISMA 2020 guidelines, a systematic search was conducted in PubMed, Scopus, and Web of Science (2020–2024), identifying 413 records. Rayyan software removed duplicates, yielding 365 studies. After screening, 21 studies met eligibility criteria. Risk of bias was assessed based on study design.

**Results:** Studies were primarily conducted in North America and Europe, focusing mostly on pre-clinical and clinical medical students, with fewer targeting residents. Interventions included Visual Thinking Strategies (VTS), narrative medicine, reflective writing, and theater-based exercises. Findings showed improvements in observational skills, diagnostic accuracy, empathy, and communication, with visual arts training enhancing critical thinking and narrative medicine fostering emotional engagement.

**Discussion:** Findings support integrating humanities-based education into medical training, linking narrative medicine to improved empathy and communication and visual arts training to better diagnostic skills. Some studies also reported reduced burnout and greater resilience. However, challenges included time constraints, inconsistent engagement, and integration difficulties. The lack of long-term follow-up raises concerns about sustained impact, and some participants experienced emotional fatigue.

**Conclusion:** Arts and humanities-based education may enhance empathy, emotional intelligence, and clinical observation in medical professionals. However, variability in study design and limited long-term assessment highlight the need for further standardized research. Findings suggest that these approaches could help shape more compassionate, perceptive physicians, warranting further exploration.

# Keywords

Narrative Medicine; Visual Art; Emotional Skills; Medical Students; Physicians

# Resumo

**Introdução:** A medicina narrativa e a análise de arte visual são abordagens educacionais emergentes para melhorar a empatia, inteligência emocional e competências interpessoais em estudantes de medicina e médicos. Apesar dos seus potenciais benefícios, a integração nos currículos médicos continua inconsistente.

**Objetivo:** Avaliar se a formação em medicina narrativa e análise de arte visual melhora a empatia, comunicação e competências de observação, contribuindo para uma melhor relação médico-paciente e melhores resultados clínicos.

**Métodos:** Seguindo as diretrizes PRISMA 2020, foi realizada uma pesquisa no *PubMed*, *Scopus* e *Web of Science* (2020–2024), identificando 413 estudos. A remoção de duplicados através do software Rayyan resultou em 365 estudos únicos. Após o processo de seleção, 21 estudos foram incluídos na revisão. O risco de viés foi avaliado.

**Resultados:** A maioria dos estudos foi realizada na América do Norte e Europa, com foco principal em estudantes de medicina pré-clínicos e clínicos, sendo menos frequentes os estudos com médicos. As intervenções analisadas incluíram *Visual Thinking Strategies*, medicina narrativa, escrita reflexiva e exercícios teatrais. Os resultados indicaram melhorias nas competências de observação, precisão diagnóstica, empatia e comunicação, com a formação em artes visuais a potenciar o pensamento crítico e a medicina narrativa a fortalecer o envolvimento emocional.

**Discussão:** Os resultados apoiam a integração destas intervenções no ensino médico, associando a medicina narrativa ao aumento da empatia e comunicação e a formação em arte à melhoria das competências diagnósticas. Alguns estudos relataram redução de *burnout* e maior resiliência. No entanto, foram identificados desafios como restrições de tempo, variações na adesão dos participantes e dificuldades na integração curricular.

**Conclusão:** A educação baseada nas artes e humanidades potência a empatia, inteligência emocional e observação clínica nos profissionais de saúde. No entanto, a variabilidade metodológica e a ausência de avaliações a longo prazo destacam a necessidade de investigação mais padronizada. Os achados sugerem que estas abordagens podem contribuir para a formação de médicos mais empáticos, compreensivos e perspicazes, justificando uma exploração mais aprofundada.

# Palavras-chave

Medicina Narrativa; Arte Visual; Competências Emocionais; Estudantes de medicina; Médicos

# Resumo alargado

**Introdução:** Esta revisão sistemática explora a integração da medicina narrativa e da análise de arte visual na educação e prática médica, examinando o seu potencial para fortalecer a empatia, a inteligência emocional e as competências interpessoais entre estudantes de medicina e médicos em exercício. Embora a proficiência técnica continue a ser um pilar central da prática clínica, tem-se dado cada vez mais atenção às dimensões emocionais e relacionais dos cuidados de saúde, suscitando interesse por métodos que desenvolvam essas competências.

A medicina narrativa, impulsionada pela Dra. Rita Charon, enfatiza a importância da narração de histórias e da escrita reflexiva na prática clínica, promovendo a comunicação e uma abordagem humanística à medicina. Ao desenvolver competência narrativa, os médicos tornam-se mais capazes de interpretar as experiências dos pacientes, proporcionando um cuidado mais compassivo e centrado no doente. Para além de melhorar as relações médico-paciente, a medicina narrativa também beneficia os profissionais de saúde, estimulando a autoconsciência, reduzindo o *burnout* e fortalecendo o compromisso ético na prática médica.

De forma semelhante, a análise de arte visual, incluindo as *Visual Thinking Strategies* (VTS), tem vindo a ser reconhecida como uma ferramenta valiosa para desenvolver competências de observação clínica, precisão no diagnóstico e inteligência emocional. A exposição à arte fomenta perceção detalhada, pensamento crítico e tolerância à ambiguidade, competências essenciais para lidar com casos clínicos complexos. Estudos indicam que o envolvimento com a arte visual melhora a prática reflexiva, a comunicação não verbal e a resiliência médica, servindo como um contrapeso à crescente tecnologização da medicina, ao reforçar a dimensão humana e relacional dos cuidados de saúde.

Do ponto de vista neurocientífico, a interação com literatura, poesia e arte visual estimula áreas-chave do cérebro envolvidas na empatia, regulação emocional e cognição social. Estudos de neuroimagem revelam que a narração ativa a rede do modo padrão (*default mode network - DMN*), promovendo a tomada de perspetiva, enquanto a análise de arte visual melhora o reconhecimento de padrões e o processamento emocional. Estes achados sugerem que a integração de experiências artísticas e literárias na formação médica pode ter benefícios cognitivos e emocionais duradouros para os profissionais de saúde.

A relevância destas intervenções torna-se ainda mais evidente face ao declínio documentado da empatia entre estudantes de medicina e médicos, especialmente durante os anos clínicos. A sobrecarga de trabalho, o *burnout* emocional e o "currículo oculto" que valoriza o distanciamento emocional contribuem para a perda da compaixão, prejudicando a qualidade do cuidado ao paciente. Combater esta problemática exige intervenções direcionadas, que incentivem o pensamento reflexivo, a escuta ativa e a comunicação centrada no paciente. As

evidências sugerem que a medicina narrativa e a análise de arte visual podem ser ferramentas eficazes para melhorar o bem-estar do médico e a satisfação do paciente, ao mesmo tempo que reduzem a incidência de processos por negligência e os custos de saúde.

Apesar dos resultados preliminares promissores, ainda existem lacunas significativas no conhecimento. A maioria dos estudos que avaliam estas intervenções são de curta duração e carecem de acompanhamento longitudinal, tornando incerto se as melhorias na empatia e na capacidade de observação se mantêm a longo prazo. Além disso, as inconsistências metodológicas — como variações nos desenhos dos estudos, instrumentos de medição e definições dos resultados — dificultam a comparação entre diferentes investigações. Embora a literatura sugira uma correlação entre empatia médica e melhores resultados clínicos, há poucas evidências diretas que relacionem a medicina narrativa e a análise de arte visual a benefícios concretos para os pacientes, como melhor adesão ao tratamento, redução das taxas de hospitalização ou recuperação mais eficaz.

A integração destas abordagens nos currículos médicos também enfrenta desafios institucionais, com ceticismo sobre a sua validade científica, limitações de tempo na formação médica e resistência cultural dentro da profissão. Alguns educadores argumentam que estas intervenções carecem de validação empírica robusta, em comparação com a formação biomédica tradicional. Outros mencionam dificuldades logísticas, questionando se estes métodos podem ser implementados de forma viável dentro de programas de ensino já sobrecarregados. Superar estes desafios exige pesquisa empírica rigorosa, padronização de metodologias de avaliação e formação de docentes, promovendo uma aceitação mais ampla destas abordagens.

A questão de investigação que orienta esta revisão é:

*"A formação em medicina narrativa e análise detalhada de arte visual melhora a empatia, a inteligência emocional e outras competências interpessoais em estudantes de medicina e médicos, em comparação com aqueles que não recebem essa formação, resultando numa melhoria na relação médico-paciente e em melhores desfechos clínicos?"*

Responder a esta questão é fundamental para avaliar se estas intervenções oferecem benefícios práticos e baseados em evidências para os profissionais de saúde.

O objetivo desta revisão sistemática é sintetizar as evidências existentes, identificar lacunas na literatura e avaliar se a medicina narrativa e a análise de arte visual têm um impacto mensurável na formação médica, no bem-estar dos médicos e na prestação de cuidados aos pacientes. Embora estudos anteriores sugiram benefícios potenciais, as inconsistências metodológicas e o ceticismo dentro da comunidade médica destacam a necessidade de uma avaliação estruturada e rigorosa da sua eficácia. Ao analisar criticamente a investigação disponível, este estudo pretende contribuir para a discussão sobre o papel das humanidades

na medicina, defendendo uma abordagem mais holística, reflexiva e centrada no paciente na formação médica e na prática clínica.

**Metodologia:** Esta revisão sistemática da literatura investiga o impacto da medicina narrativa e da formação na análise de arte visual no desenvolvimento de competências emocionais e interpessoais em estudantes de medicina e médicos em exercício.

De forma mais detalhada, este estudo procura explorar se estas intervenções promovem um aumento na empatia, inteligência emocional, compaixão e simpatia, fortalecendo, assim, a relação entre médico e paciente e contribuindo para a melhoria da qualidade global dos cuidados de saúde.

Para garantir rigor e transparência metodológica, esta revisão segue as diretrizes do PRISMA.

**Estruturação do Estudo e Critérios de Inclusão:**

Para assegurar coerência e sistematicidade, o estudo foi orientado pelo modelo PICO, que define de forma estruturada os elementos fundamentais da investigação.

- População: Estudantes de medicina e médicos em diferentes fases da sua formação e especialização, considerando que as suas competências emocionais e interpessoais são determinantes para a prática clínica.
- Intervenção: Programas de formação estruturados em medicina narrativa e análise de arte visual, recorrendo a técnicas de narração de histórias e interpretação visual reflexiva (ex.: análise de pinturas e imagens clínicas), com o objetivo de aprimorar competências de observação, compreensão e envolvimento emocional.
- Comparação: Formação médica tradicional, que não integra estes elementos artísticos e narrativos.
- Resultados esperados: Aumento da empatia, inteligência emocional, pensamento crítico e capacidade de análise, assim como o fortalecimento da eficiência interpessoal—capacitando estudantes e médicos para melhorar a comunicação e estabelecer relações mais eficazes com pacientes e colegas.

Para além destes objetivos principais, são esperados benefícios secundários, como uma melhoria na comunicação médico-paciente, maior satisfação e confiança do paciente e uma abordagem mais humanizada e atenta na prática clínica.

**Critérios de Elegibilidade:**

Para garantir a inclusão apenas de estudos relevantes e metodologicamente rigorosos, foram definidos critérios de elegibilidade específicos:

**Inclusão:**

- Estudos com populações-alvo de estudantes de medicina ou médicos em exercício.
- Artigos publicados em inglês entre 2020 e 2024.
- Intervenções explicitamente relacionadas com a medicina narrativa ou arte visual.

- Estudos que relataram melhorias significativas em empatia, inteligência emocional ou outras competências interpessoais.

**Exclusão:**

- Estudos sobre outros profissionais de saúde (ex.: enfermeiros, dentistas).
- Intervenções baseadas noutras formas de arte não abrangidas nesta revisão.
- Literatura cinzenta, *preprints* ou estudos ainda em fase de publicação/validação.

**Estratégia de Pesquisa e Bases de Dados**

A pesquisa foi conduzida em três bases de dados académicas de referência — *PubMed*, *Scopus* e *Web of Science* — através da utilização de termos MeSH e operadores Booleanos, assegurando a recuperação precisa dos estudos mais relevantes.

Resultados da pesquisa inicial:

- *PubMed*: 1.548 artigos (reduzidos para 190 após aplicação de filtros).
- *Scopus*: 3.880 artigos (reduzidos para 86 após filtragem).
- *Web of Science*: 1.449 artigos (reduzidos para 137 após filtragem).

Após a aplicação dos critérios de inclusão e exclusão, o total de estudos identificados foi de 413. Para eliminar duplicações e facilitar a triagem, os artigos foram importados para o software *Rayyan*, uma ferramenta amplamente utilizada em revisões sistemáticas para otimizar a seleção de artigos. O processo de identificação de duplicados permitiu remover 90 artigos repetidos, reduzindo o conjunto final para 365 artigos únicos.

**Triagem e Seleção dos Estudos**

A triagem foi realizada em três fases sequenciais:

1. Triagem de títulos: Excluídos 260 artigos que não se alinhavam com os objetivos do estudo.
2. Triagem de resumos: Excluídos 70 artigos, mantendo 35 estudos para análise completa do texto.
3. Revisão integral dos artigos: Após uma avaliação rigorosa, foram selecionados 21 estudos que cumpriam todos os critérios metodológicos estabelecidos.

Os estudos finais foram importados para *Mendeley Desktop* para facilitar a organização, citação e gestão dos dados.

**Avaliação da Qualidade e Risco de Viés:**

A qualidade metodológica e o risco de viés foram avaliados utilizando instrumentos validados, adaptados ao tipo de estudo:

- Ensaios clínicos randomizados- *RCTs*: Avaliação com *Cochrane Risk of Bias 2 (RoB 2)*.
- Estudos não randomizados/quase-experimentais: Avaliação com ROBINS-I (para detetar viés de seleção e fatores de confusão).
- Estudos observacionais (coorte e caso-controlo): Avaliação com a Escala *Newcastle-Ottawa* (NOS).

- Revisões sistemáticas e meta-análises: Avaliação com a Lista de Verificação de Avaliação Crítica do *JBI*.
- Estudos qualitativos: Avaliação com a Lista de Verificação Qualitativa CASP.

Dada a heterogeneidade dos desenhos dos estudos, foi implementado um sistema de classificação padronizado, categorizando os estudos em alta, moderada ou baixa qualidade, de acordo com os critérios metodológicos específicos de cada ferramenta de avaliação.

A adoção desta abordagem rigorosa e sistemática garante transparência e credibilidade na avaliação do impacto da medicina narrativa e da análise de arte visual na formação médica. Os resultados desta revisão contribuirão para uma melhor compreensão da eficácia destas intervenções na promoção de inteligência emocional, empatia e interação médico-paciente, auxiliando no desenvolvimento de programas curriculares que incorporem cuidados de saúde mais humanizados e reflexivos.

**Resultados:** Os achados desta revisão indicam que as intervenções baseadas em artes e humanidades tiveram um impacto positivo nas competências de observação, na empatia e na autorreflexão entre estudantes de medicina e médicos em exercício. Foram utilizados diversos métodos, incluindo análise de arte visual, medicina narrativa, narração de histórias e dramatização, muitas vezes combinados para estimular a empatia clínica, o pensamento crítico e a aceitação da incerteza no diagnóstico.

Uma das descobertas mais consistentes foi a melhoria na precisão da observação e na exatidão diagnóstica, especialmente em áreas médicas visualmente exigentes, como radiologia, dermatologia e oftalmologia. Programas que incorporaram estratégias de pensamento visual e análise de belas-artes ajudaram os estudantes a reconhecer padrões, descrever imagens clínicas com mais precisão e desenvolver uma perceção mais refinada dos detalhes visuais. Estas intervenções também expandiram a capacidade dos estudantes de interpretar múltiplas perspetivas e aceitar a ambiguidade, uma competência essencial para a abordagem de casos clínicos complexos.

Para além da melhoria nas competências de observação clínica, a formação baseada nas humanidades desempenhou um papel crucial no desenvolvimento da empatia e da inteligência emocional. A participação em medicina narrativa e escrita reflexiva permitiu aos estudantes aprofundar a compreensão sobre as experiências, o sofrimento e os desafios emocionais dos pacientes. Embora muitos participantes tenham referido sentir-se mais ligados aos seus pacientes, os resultados objetivos sobre mudanças na empatia variaram entre estudos, sugerindo que a perceção subjetiva da empatia nem sempre corresponde a medições objetivas.

Outro resultado importante foi a redução do preconceito e do estigma em relação a certas condições médicas. As intervenções artísticas promoveram uma maior aceitação, maior consciência sobre a exclusão social e maior sensibilidade para com pacientes com doenças estigmatizadas, como o *HIV*. Através da exposição a narrativas e perspetivas diversas, os

participantes desenvolveram uma compreensão mais abrangente do sofrimento humano, da dignidade e da discriminação, reforçando a necessidade de um cuidado médico mais compassivo e abrangente.

Estas intervenções também promoveram a autorreflexão e a formação da identidade profissional, através da discussão de literatura, da escrita criativa e da partilha de histórias pessoais para processar as experiências clínicas. Esta prática reflexiva foi associada a maior atenção plena (*mindfulness)*, maior consciência dos próprios preconceitos e uma compreensão mais sofisticada dos dilemas éticos na medicina. Notavelmente, as participantes do sexo feminino demonstraram beneficiar mais significativamente destas intervenções, especialmente em áreas relacionadas com comunicação, resiliência e pensamento reflexivo.

Apesar dos efeitos positivos, o impacto a longo prazo destas intervenções foi inconsistente. Alguns estudos relataram benefícios sustentados, enquanto outros notaram que a motivação dos participantes diminuía com o tempo, particularmente quando estes programas não eram integrados de forma contínua na formação médica. Além disso, alguns estudantes manifestaram ceticismo sobre a relevância prática da aprendizagem baseada nas artes, especialmente quando confrontados com as exigências científicas e clínicas do curso de medicina. Fatores como a falta de tempo e obstáculos institucionais também influenciaram as taxas de participação e a eficácia geral dos programas.

Embora esta revisão confirme que a empatia, a precisão na observação e as competências de comunicação podem ser ensinadas e aprimoradas, os dados também sugerem que estas competências tendem a diminuir sem reforço contínuo. Isto reforça a necessidade de intervenções mais intensivas e sustentadas, bem como da integração curricular, para garantir benefícios duradouros tanto na educação médica como no cuidado ao paciente.

**Discussão:** Os resultados desta revisão sistemática destacam o impacto significativo da medicina narrativa e do treino em artes visuais na empatia, inteligência emocional, competências de comunicação e observação clínica de estudantes de medicina e médicos. Estas intervenções demonstraram potencial para promover um cuidado mais centrado no paciente, melhorar a relação médico-paciente e reforçar a precisão diagnóstica. No entanto, a sua eficácia depende de fatores como o nível de envolvimento dos estudantes, o apoio institucional e as limitações de tempo nos currículos médicos.

Principais Resultados e Impacto: Uma das descobertas mais consistentes foi o fortalecimento da empatia e da inteligência emocional através da exposição estruturada à narração de histórias, escrita reflexiva e interpretação de arte visual. Estas abordagens permitiram que os profissionais de saúde entendessem melhor as experiências dos pacientes, reduzissem o distanciamento emocional e participassem em interações mais significativas. O treino baseado em artes visuais, em particular, ajudou os participantes a desenvolver competências de

observação mais aguçadas e uma melhor interpretação de sinais não verbais, contribuindo para avaliações clínicas mais eficazes.

Outro resultado relevante foi a melhoria das competências de comunicação, especialmente em interações emocionalmente difíceis. A formação baseada nas humanidades proporcionou aos profissionais mais confiança para abordar questões médicas complexas e lidar com conversas difíceis, como diagnósticos graves, cuidados paliativos e sensibilidades culturais. Estas abordagens também fomentaram o trabalho em equipa, promovendo a escuta ativa e discussões interdisciplinares.

Além disso, o envolvimento em exercícios reflexivos e artísticos foi associado a uma menor taxa de *burnout* e maior resiliência emocional. A prática estruturada da narrativa e análise de arte proporcionou um espaço para os estudantes processarem emoções e lidarem com o stress da profissão médica, ajudando-os a reconectar-se com a dimensão humana da medicina.

Foram identificados vários desafios e limitações. As restrições de tempo na formação médica dificultaram a participação plena dos estudantes, resultando em taxas de envolvimento inconsistentes. Além disso, alguns alunos mostraram-se céticos quanto à relevância destas intervenções, indicando que o seu nível de participação pode variar consoante a perceção da utilidade clínica.

Outro obstáculo foi a falta de estudos longitudinais para avaliar se as melhorias na empatia e nas competências de comunicação são sustentadas ao longo do tempo. Embora os ganhos a curto prazo fossem evidentes, há falta de dados sobre o impacto a longo prazo destas abordagens no ambiente clínico.

**Conclusão:** Esta revisão destaca o potencial das intervenções baseadas em artes e humanidades na educação médica, promovendo o desenvolvimento da empatia, inteligência emocional e competências de observação. O envolvimento com artes visuais, medicina narrativa e práticas reflexivas melhora a comunicação com os pacientes, a capacidade de lidar com a incerteza clínica e a resiliência emocional dos médicos.

Contudo, as diferenças na metodologia dos estudos e na forma como os resultados foram medidos limitam a capacidade de tirar conclusões definitivas, particularmente em relação ao impacto a longo prazo. A realização de pesquisas mais padronizadas e de longa duração será essencial para compreender os benefícios sustentados destas abordagens.

Apesar destes desafios, a evidência crescente sugere que a integração destas abordagens nos currículos médicos pode formar médicos mais reflexivos, compassivos e perspicazes, melhorando a qualidade dos cuidados de saúde e o bem-estar dos profissionais.

## Palavras-Chave:

Medicina Narrativa; Arte Visual; Competências Emocionais; Estudantes de medicina; Médicos

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# List of Acronyms

| | |
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| UBI | Universidade da Beira Interior |
| PRISMA | Preferred Reporting Items for Systematic reviews and Meta-Analyses |
| PICO | Population, Intervention, Comparison(s) and Outcome |
| MeSH | Medical Subject Headings |
| RCT | Randomized Controlled Trial |
| USA | United States of America |
| UK | United Kingdom |
| PhD | Doctor of Philosophy |
| VTS | Visual Thinking Strategies |
| DMN | Default mode network |
| PROSPERO | International Prospective Register of Systematic Reviews |
| HIV | Human Immunodeficiency Virus |
| RoB | Cochrane Risk of Bias |
| ROBINS-I | Risk of Bias in Non-Randomized Studies of Interventions |
| NOS | Newcastle-Ottawa Scale |
| CASP | Critical Appraisal Skills Programme |
| JBI | Joanna Briggs Institute |
| TEQ | Toronto Empathy Questionnaire |
| EBC | Empathy Behaviour Checklist |
| HAPPE | Humanistic Aspirations as a Propeller of Palliative medicine Education |
| E&AC | Empathy and Visual Art Curriculum |
| JES | Jefferson Scale of Empathy |
| TSET | Jeffreys Transcultural Self-Efficacy tool |
| TOA | Budner Tolerance for Ambiguity tool |
| SPs | Standardized patients |
| IRI | Interpersonal Reactivity Index |

# 1. Introduction

*"Astonishingly, the voluminous records of previous hospitalizations, clinic visits, and the like contain little or no information about what patients understand and feel about their major diagnoses and how they are coping with the effects of chronic disease and disability, the treatment, and, in some cases, their impending death. (...) Getting the voice of the patient into the history of present illness will not only help to right the medical record but also help to right the relationship of physician and patient."(1)*

It was the year 1988 when William Donnelly, a medical doctor wrote this in his article "Righting the Medical Record. Transforming Chronicle Into Story". These words, written 37 years ago, already pointed to a fundamental gap in medical practice—the absence of the patient's perspective in medical records and clinical interactions. Donnelly believed that active listening and documentation of patients' narratives in their own words were essential elements missing from the medical interview process. He argued that such an approach would preserve crucial information, foster empathy among healthcare providers, and signal the physician's genuine investment in the patient as a person. Furthermore, he emphasized that this shift would strengthen the physician-patient relationship, a key factor in navigating illness.

More than a decade later, in 2004, Celia Engel Bandman, PhD, expanded upon Donnelly's ideas in her work *"On Medical Humanism"*, where she stated:

*"By recognizing that the language of medicine and the language of the patient's world transformed by illness are not the same, the medical humanist creates a communication bridge. And in so doing, provides support to both doctor and patient as they face uncertainty."(2)*

This observation highlights a critical challenge in medical communication—the disparity between the physician's clinical perspective and the patient's lived experience of illness. The language of medicine is often reductionist, focusing on diagnostic categories, symptoms, and measurable data, whereas the patient's world is shaped by subjective emotions, fears, and personal narratives. (3) The failure to bridge this linguistic and perceptual gap may contribute to psychological detachment, reinforcing the outdated belief that physicians must emotionally distance themselves from patients to maintain professionalism.

However, such detachment is neither necessary nor beneficial. One significant issue is that when a patient shares their story, the physician automatically interprets it through a clinical framework, shaping the narrative based on medical knowledge rather than the patient's

personal experience. This phenomenon—the physician's perspective of the patient's perspective—often results in an incomplete or distorted representation of the patient's reality.

Bandman's insight underscores the urgent need to develop mechanisms for bridging this communication gap, creating a true dialogue between doctor and patient rather than a one-sided translation of illness into medical terms. This is where interventions such as narrative medicine and visual art analysis become essential tools. Narrative medicine, pioneered by Rita Charon, equips physicians with the skills to deeply engage with patient stories, fostering a more empathetic, reflective, and patient-centered approach. Similarly, the use of visual arts and Visual Thinking Strategies (VTS) helps physicians sharpen observational skills, deepen emotional awareness, and enhance communication—all of which contribute to stronger physician-patient relationships and improved healthcare outcomes.

To conclude this reflection, it is fitting to recall the words of one of the greatest scientific minds of all time, Albert Einstein, who recognized the profound connection between science and the arts:

*"The greatest scientists are always artists as well."*

*and*

*"(...) arts and sciences are branches of the same tree."(4,5)*

These statements remind us that medicine is not merely a technical discipline, but also a deeply humanistic endeavor—one that requires both scientific precision and artistic sensibility to truly understand and care for patients.

## 1.1 Theoretical, Scientific, and Clinical Perspectives on Narrative Medicine and Visual Art in Healthcare

1.1.1 Key concepts definition:

- **Narrative Medicine:**
  Narrative medicine is an interdisciplinary approach to healthcare that emphasizes the role of storytelling in clinical practice. It is rooted in the concept of narrative competence, which is the ability to recognize, interpret, and respond to patients' stories with empathy, insight, and professionalism. (8) This model, pioneered by Dr. Rita Charon, integrates the humanities—particularly literature and reflective writing—into medical education and practice to enhance communication, foster humanistic care, and bridge the gap between the scientific and personal aspects of medicine. (9)
  At its core, narrative medicine views patients not merely as cases to be solved but as individuals with unique experiences, emotions, and perspectives. It acknowledges that

illness is not only a biological disruption but also a deeply personal and social experience (10). By actively listening to patients' narratives, healthcare providers gain a deeper understanding of their suffering, fears, and hopes, leading to more effective and compassionate care. This approach also benefits healthcare professionals by fostering self-awareness, reducing burnout, and strengthening the ethical and emotional dimensions of their practice (11).

Narrative medicine encompasses four key dimensions of medical relationships: the interaction between physician and patient, the physician's self-awareness and reflection, the collaboration among healthcare professionals, and the broader discourse between medicine and society. Through these dimensions, narrative medicine encourages attentiveness, representation, and affiliation—three fundamental values that reinforce trust, respect, and meaningful engagement in medical practice.

In addition to patient care, narrative medicine plays a crucial role in medical education by training students and professionals in the skills of close reading, critical thinking, and reflective writing (12). By developing these competencies, medical practitioners learn to navigate the complexities of clinical encounters with greater sensitivity and insight. Furthermore, this model has gained increasing importance in the post-pandemic era, where digital healthcare and telemedicine have challenged traditional forms of doctor-patient interaction. Narrative medicine serves as a counterbalance to the technologization of healthcare by reintroducing a deeply humanistic element into clinical practice (13).

Ultimately, narrative medicine does not replace traditional evidence-based medicine but rather complements it by integrating the subjective, lived experience of illness into the diagnostic and treatment process (14). It offers a holistic approach that not only improves patient outcomes but also enhances the overall experience of care by fostering connection, understanding, and a sense of shared humanity (15). As the healthcare landscape continues to evolve, narrative medicine stands as a vital model for ensuring that medicine remains compassionate, ethical, and patient-centered.

- **Art, Visual Art and Visual Thinking Strategies**:

  Art and visual art in medicine serve as powerful tools for enhancing clinical observation, diagnostic precision, critical thinking, and emotional intelligence. By engaging with visual art, medical professionals develop a heightened ability to perceive subtle details, recognize patterns, and interpret complex visual information, all of which are essential in clinical settings (16).

  Beyond cognitive benefits, the aesthetic experience of art fosters empathy, self-reflection, and resilience, contributing to a more humanistic approach to patient care.

Recent research highlights the embodied nature of art perception, demonstrating that art not only evokes cognitive and emotional responses but also elicits bodily sensations that deepen the viewer's connection to the artwork (17)

These bodily responses, often linked to somatosensory and interoceptive processes, suggest that aesthetic experiences influence physiological states, further reinforcing the relevance of art-based training in medical education. Studies indicate that engaging with art in clinical training enhances diagnostic accuracy, communication skills, and clinical reasoning, while also strengthening the physician-patient relationship and mitigating burnout (17). The integration of visual arts into medical training provides structured methodologies for applying artistic insights to clinical practice. Partnerships between medical schools and museums, as well as arts-based curricula, offer a framework for incorporating visual literacy, reflective practice, and interdisciplinary learning into medical education (18).

As healthcare continues to evolve, the incorporation of visual art into medical practice serves as a counterbalance to the technological aspects of modern healthcare, ensuring that patient interactions remain deeply personal, holistic, and humane.

**Visual Thinking Strategies (VTS)** is a structured, research-based educational methodology that employs facilitated discussions of visual art to enhance observational skills, critical thinking, problem-solving, and communication in medical education (18). Originally developed for museum education, VTS has been successfully adapted into medical training to develop visual literacy, pattern recognition, and emotional intelligence among clinicians (16).

At the core of the VTS method are guided discussions that use open-ended questions such as "What is going on in this image?", encouraging participants to observe details, justify their reasoning, and consider multiple perspectives (19). This reflective and interactive process enhances tolerance for ambiguity, a crucial skill in clinical practice where medical diagnoses often require navigating uncertainty and incomplete information. It also fosters active listening, empathy, and deeper engagement with patient narratives, ultimately contributing to a more humanistic approach to medicine.

Recent research highlights that engaging with visual art through VTS activates cognitive and emotional processes, with findings demonstrating that aesthetic experiences trigger distinct bodily sensations that influence perception, decision-making, and emotional regulation (17). The integration of VTS into medical education has been shown to improve diagnostic accuracy, enhance reflective practice, and strengthen patient-centered care by training clinicians to approach cases with heightened awareness and sensitivity. As an innovative pedagogical approach, VTS offers a powerful and structured framework to cultivate critical thinking, observational

precision, and empathy in future healthcare professionals, reinforcing the essential balance between scientific rigor and human connection in medicine.

### 1.1.2 Neuroscientific Basis of these interventions

Engaging with literature, poetry, writing, and visual arts has profound neurobiological effects, fostering cognitive and emotional growth by stimulating key brain regions involved in empathy, emotional regulation, and critical thinking. Neuroimaging studies reveal that experiencing art activates the medial orbitofrontal cortex, a region linked to the perception of beauty and emotional processing, while reading literature stimulates the left occipito-temporal region, essential for language comprehension and symbolic interpretation (20). Exposure to narrative forms such as literature and storytelling engages the default mode network (DMN), which is associated with self-referential thought and the ability to take others' perspectives—crucial for developing empathy (21). Similarly, writing has been shown to strengthen the prefrontal cortex, improving cognitive flexibility and emotional regulation, while poetry, with its rhythmic and metaphorical structures, enhances connectivity between the right and left hemispheres, fostering both creative and analytical thinking (21). Visual art, particularly when individuals analyze or create it, activates the ventral striatum and anterior cingulate cortex, areas involved in reward processing and emotional engagement, which contribute to increased emotional intelligence and deeper comprehension of non-verbal cues (20). These effects are reinforced by neuroplasticity, the brain's ability to rewire and form new neural connections in response to repeated artistic and literary exposure, leading to long-term improvements in observational skills, communication, and social cognition (20,22). Given these findings, which offer a more objective and scientifically grounded perspective compared to abstract or purely qualitative analyses, it becomes clearer that incorporating artistic and literary experiences into medical education and professional development can be an effective strategy for enhancing empathy, emotional intelligence, and interpersonal skills among healthcare practitioners.

### 1.1.3 The greater picture of it all

*Why is it so relevant to improve emotional and interpersonal skills of medical students and physicians?*

Empathy and observational acuity are foundational to effective patient care, significantly influencing clinical outcomes, patient satisfaction, and adherence to treatment plans. Research has consistently demonstrated that healthcare providers who exhibit higher levels of empathy foster stronger patient-provider relationships, leading to enhanced trust, greater patient engagement, and better health outcomes (23). A systematic review on empathy in healthcare found that greater empathy is directly associated with improved clinical results, including

better patient adherence to treatment, reduced complications, and overall increased patient satisfaction (23). Additionally, compassionate care has been linked to lower malpractice claims, reduced healthcare costs, and even decreased rates of serious complications in chronic conditions (24). Observational skills, particularly those acquired through structured training, have also been shown to improve diagnostic accuracy, as exemplified in cases where subtle visual cues that could go unnoticed may lead to timely and life-saving diagnoses (25). Despite these clear benefits, research indicates a concerning decline in empathy during medical education and training, underscoring the need for interventions that cultivate and sustain this essential trait (26). Given the evidence supporting the positive impact of empathy, greater communication capacity, increased interpersonal and observational skills on healthcare outcomes, interventions such as narrative medicine and visual art analysis present a compelling case and hold promise for continued research as potential strategies for enhancing these competencies in medical students and physicians.

## 1.2 Rationale

### 1.2.1 Context and background

**The Current State of Narrative Medicine & Visual Art in Medical Education:**

Narrative medicine and visual art analysis have gained traction in medical education as tools for improving empathy, communication, and diagnostic skills. Narrative medicine, as conceptualized by Rita Charon, emphasizes the use of storytelling and reflective writing to enhance a physician's ability to understand and respond to patient experiences (27). This approach is now incorporated into various medical curricula worldwide, often through structured workshops, reflective writing exercises, and patient storytelling sessions (28). Similarly, visual art training, particularly through Visual Thinking Strategies (VTS), has been recognized to enhance medical students' observational and interpretive skills, fostering greater attentiveness and emotional intelligence (29).

Despite these advancements, the integration of these approaches in medical training remains inconsistent. Some medical schools and training programs have successfully implemented narrative and artistic approaches, but others remain skeptical or underutilize them (30). For instance, a qualitative study exploring physicians' perspectives on narrative medicine found that while primary care physicians generally valued its impact, surgeons and other specialists were often skeptical about its relevance to their practice (31). This suggests that while there is growing interest, there remains resistance to these methods, especially among specialties that emphasize technical proficiency over interpersonal skills (32).

**The Decline of Empathy in Medical Students & Physicians:**

Research has consistently documented a decline in empathy and emotional intelligence among medical students and physicians as they progress through their training (33). A systematic review highlighted that medical students often experience a significant drop in empathy levels, particularly during their clinical years, which can negatively impact on patient care and physician well-being (34). Several factors contribute to this decline:

- Emotional Burnout & Workload: Medical students and residents face intense workloads, high-stakes decision-making, and frequent exposure to suffering and death. Over time, emotional exhaustion can lead to compassion fatigue, diminishing their ability to engage empathetically with patients (35).
- The "Hidden Curriculum": While medical education formally teaches professionalism and patient-centered care, unspoken norms in clinical settings often prioritize efficiency, objectivity, and emotional detachment over empathetic engagement (36).
- Cognitive Overload: As students transition into clinical practice, they must integrate vast amounts of medical knowledge and procedural skills. This cognitive burden can reduce the mental space available for empathetic and reflective thinking, leading to a more mechanistic approach to patient interactions (37).

**The Need to Promote Empathy & Emotional Skills in Medicine:**

Given the documented decline in empathy, there is an urgent need to actively promote and preserve emotional and interpersonal skills in medical training (38). Studies suggest that interventions like narrative medicine and visual art analysis can help counteract this decline by fostering reflective thinking, improving active listening skills, and encouraging perspective-taking (39).

- Impact on Burnout & Physician Well-being: Physicians with higher emotional intelligence and empathy tend to experience lower rates of burnout, greater professional satisfaction, and improved resilience (40).
- Improved Diagnostic Accuracy & Patient Care: By training physicians to be more observant and attuned to subtle patient cues—whether verbal, non-verbal, or emotional—these approaches may enhance clinical reasoning, diagnostic accuracy, and decision-making (41).
- Enhanced Patient-Doctor Relationships: Empathy and active listening are directly correlated with better patient outcomes, including increased adherence to treatment, higher patient satisfaction, and improved health outcomes (42).

**Challenging the "Detachment Model" in Medicine While Maintaining Physician Well-being:**

One of the persistent challenges in medical training is balancing emotional engagement with self-preservation (43). Many physicians are taught that emotional detachment is necessary to maintain objectivity and avoid burnout. However, recent research suggests that complete emotional disengagement can be detrimental—both for patients and for physicians themselves (44).

- The Need for a Balanced Approach: While emotional self-regulation is crucial, maintaining a compassionate connection with patients has been shown to reduce stress, increase job satisfaction, and improve overall mental well-being among physicians (45).
- Combatting the Stigma Against Emotion in Medicine: Historically, emotional intelligence and empathy have been undervalued in medical training. This research challenges that perception, advocating for structured, evidence-based methods to integrate emotional and interpersonal skill-building into medical education (46).

### 1.2.2 Gaps in knowledge

While preliminary studies suggest that narrative medicine and visual art interventions have potential benefits, several knowledge gaps remain, necessitating further investigation.

**Lack of Longitudinal Studies on the Effects of These Interventions:**

Most studies on narrative medicine and visual art in medical education are short-term interventions, assessing changes in empathy and observational skills immediately after training (47). However, little is known about the long-term retention of these skills:

- How sustainable are improvements in empathy, emotional intelligence, and patient communication?
- Do these skills translate into long-term behavioural change in clinical practice?
- What is the impact on physician well-being and job satisfaction over time?

Longitudinal studies are necessary to determine whether these interventions provide lasting benefits beyond initial training (48).

**Variability in Study Designs & Outcome Measures:**

A significant challenge in assessing these interventions is the lack of standardized methodologies (49):

- Different studies use inconsistent measurement tools to assess empathy and emotional intelligence, ranging from self-reported surveys (which may be biased) to objective behavioural assessments (50).

- The absence of uniform study designs makes it difficult to compare results across different institutions and specialties (51).

Establishing standardized evaluation frameworks is essential for producing more reliable and generalizable findings (52).

**Limited Data on the Direct Impact on Patient Outcomes:**

While studies suggest that physician empathy correlates with better patient outcomes, there is limited research that directly links narrative medicine and visual art interventions to improved clinical results (53).

More studies are needed to examine whether these interventions lead to:

- Higher patient adherence to treatment plans
- Reduced hospitalization rates and complications
- Better overall patient satisfaction scores(54)

Demonstrating a concrete impact on clinical outcomes would provide stronger justification for integrating these approaches into medical education (55).

**Barriers to Implementation in Medical Curricula:**

Despite increasing interest, many institutions remain hesitant to incorporate these interventions into their curricula (56). Common barriers include:

- Perceived Lack of Scientific Rigor: Some educators question whether narrative medicine and visual art analysis produce measurable benefits comparable to traditional medical training (57).
- Time Constraints in Medical Education: Given the demanding nature of medical curricula, many institutions struggle to allocate time for non-traditional training methods (58).
- Cultural Resistance Within the Medical Field: There is still stigma surrounding the role of emotion and humanities in medical education, with some viewing these approaches as non-essential compared to biomedical training (59).

Addressing these barriers through robust empirical research, faculty training, and curriculum development will be key to promoting broader acceptance of these methods (60).

## 1.3 Foundation of the systematic Review

### 1.3.1 Research question

"Does training in narrative medicine and detailed visual art analysis enhance empathy, emotional intelligence, and other emotional and interpersonal skills in medical students and practicing physicians, compared to those without such training, thereby improving patient-doctor relationships and contributing to better patient outcomes?"

This question, is fundamental in addressing a critical aspect of modern medical education. While technical proficiency remains central to clinical practice, growing attention is being given to the development of emotional intelligence, communication skills, and empathy as key competencies for effective patient care. However, despite increasing recognition of these qualities, the best methods for cultivating them within medical training remain uncertain. Narrative medicine and visual art analysis have emerged as potential tools for fostering these skills, yet their effectiveness and integration into curricula lack sufficient empirical validation. This study, therefore, seeks to evaluate whether these approaches provide measurable benefits to future and current physicians. Understanding their effectiveness will help inform ongoing discussions on their role in shaping a more holistic, patient-centered approach to medical education. The following section explores this and the necessity of further investigation.

### 1.3.2 Review purpose

In recent years, there has been a growing interest in integrating narrative medicine and visual art analysis into medical education, aiming to enhance competencies such as empathy, communication, and patient-centered care. However, significant gaps persist in the current body of research. Many existing studies are limited by small sample sizes, lack of control groups, and short-term interventions, which constrain the generalizability and robustness of their findings. For instance, a narrative review highlighted that while structured visual arts curricula can improve clinical observational skills, there is a scarcity of rigorous data demonstrating their effectiveness in promoting empathy, teamwork, communication skills, wellness, resilience, or cultural sensitivity among medical students (16).

Furthermore, the methodologies employed across studies vary widely, leading to inconsistent outcomes and making it difficult to draw definitive conclusions about the efficacy of these interventions. A comprehensive review emphasized the need for more standardized research designs to assess the impact of art in medical education effectively.

Despite these methodological limitations, preliminary evidence suggests that narrative and artistic approaches may hold promise in enriching medical training. Further research is needed to explore their potential role in bridging gaps between technical expertise and the emotional

intelligence required for patient care. Addressing these research gaps through well-designed studies could strengthen the evidence base and encourage broader integration of these approaches into medical curricula.

However, even as interest in these methods grows, resistance and skepticism persist within medical education. Traditional training has long been rooted in empirical, evidence-based methodologies, often prioritizing biomedical knowledge over reflective, humanistic practices. As a result, interventions that emphasize storytelling, art interpretation, and emotional engagement are sometimes perceived as secondary or lacking sufficient empirical validation, which may contribute to their limited integration into medical curricula. (6)

This skepticism remains despite various initiatives seeking to explore their potential impact on empathy, communication skills, and patient-centered care. Some programs, such as a collaborative narrative medicine series between the University of Kentucky and the New York Institute of Technology (7), have explored whether narrative and artistic approaches can challenge stigmatized perspectives in healthcare and support the development of emotional intelligence among medical trainees.

By highlighting the potentially tangible benefits of these approaches—such as fostering empathy, improving communication skills, and enhancing patient care—this review examines their possible contribution to bridging the gap between traditional medical education and more holistic, patient-centered training. However, structured implementation and formal recognition of these interventions remain inconsistent, further underscoring the need for comprehensive evaluation.

By systematically reviewing existing literature on narrative medicine and visual art analysis, this study seeks to assess their reported impact, identify potential gaps in knowledge, and explore whether these approaches hold promise for improving emotional and interpersonal competencies in medical professionals. The findings of this review may help inform discussions on the validity and applicability of these interventions in medical education, contributing to the ongoing debate on their role within clinical training.

Thus, while these approaches have gained increasing attention, there remains a pressing need to further examine their educational value, practical implementation, and long-term effects.

Given this context, a rigorous evaluation of narrative medicine and visual art analysis is essential to assess their impact within medical education. The existing knowledge gaps, combined with the ongoing skepticism surrounding these approaches, highlight the necessity of a systematic review to synthesize available evidence, assess methodological limitations, and explore their potential for broader implementation. By critically analyzing the current literature, this study aims to contribute to a more comprehensive understanding of how these

interventions may shape the emotional and interpersonal competencies of medical students and physicians, ultimately informing future educational frameworks and clinical practice.

# 2. Methodology:

## 2.1 Objectives

The primary objective of this systematic review is to evaluate the impact of training in narrative medicine and detailed visual art analysis on the development of emotional and interpersonal skills, including empathy, emotional intelligence, compassion, and sympathy, among medical students and practicing physicians. By synthesizing evidence from relevant studies, this review aims to determine whether these interventions contribute to improved patient-doctor relationships and enhance the quality of patient care. The findings will provide a comprehensive understanding of how incorporating these approaches into medical education and practice may influence professional competencies and inform future curriculum design and clinical training programs.

## 2.2 Study Design

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (62, 69). The review aimed to synthesize evidence on the intersection of narrative medicine, art, and emotional constructs such as empathy, compassion, and emotional intelligence in medical training and practice. The research question was developed using the PICO (Population, Intervention, Comparison, Outcome) framework (70), which provided a structured foundation for defining the scope of the review and guiding the methodology. This study was registered in the database of the International Prospective Register of Systematic Reviews (PROSPERO) under the protocol identification number ID: 643642.

## 2.3 Research Question and PICO Framework:

The formulation of the research question for this systematic review was guided by the PICO (Population, Intervention, Comparison, Outcome) framework. This approach ensured clarity, focus, and alignment with the review's objectives. By structuring the key elements of the study, the PICO model ensured that the research question comprehensively addressed the essential topics while remaining concise. This framework enabled the precise definition of the population, intervention, comparison, and outcomes, which are central to evaluating the impact of narrative medicine and visual art analysis on emotional and interpersonal skills in medical professionals.

- **P - Population**
  - **Who is being studied?**
    - Medical students and practicing physicians (doctors).
    - These individuals represent healthcare professionals at different stages of their careers, whose emotional and interpersonal skills are critical for effective patient care.
- **I - Intervention**
  - **What is being done to the population?**
    - Training in narrative medicine and detailed visual art analysis**.**
    - This includes structured programs or interventions designed to improve emotional skills through methods like interpreting stories (narrative medicine) or analysing and discussing visual arts in a detailed and reflective manner.
- **C - Comparison**
  - **What is the alternative to the intervention?**
    - No exposure to narrative medicine or detailed visual art analysis, or reliance on traditional medical training that does not include these components.
    - This serves as the control group to measure the impact of the intervention.
- **Outcome**
  - **What are the intended results?**
    - **Primary Outcomes:**
      - Enhanced empathy**,** emotional intelligence**,** sympathy**,** and other emotional and interpersonal skills**.**
    - **Secondary Outcomes:**
      - Improved patient-doctor relationships**.**
      - Contribution to better patient outcomes (e.g., satisfaction, adherence to treatment, overall care quality).

Building upon the structured breakdown provided above, the essential elements of this review were carefully defined, enabling the formulation of a precise research question. The research question, as mentioned in Chapter 1, is as follows:

*"Does training in narrative medicine and detailed visual art analysis enhance empathy, emotional intelligence, and other emotional and interpersonal skills in medical students and practicing physicians, compared to those without such training, thereby improving patient-doctor relationships and contributing to better patient outcomes?"*

## 2.4 Eligibility criteria

Table 2.1

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| • Population:<br>Articles and studies involving medical students or practicing physicians (doctors).<br>• Language:<br>Published in English.<br>• Publication Date: [2020-2024]<br>Results published between 2020 and 2024 to ensure the review includes recent and relevant evidence.<br>• Accessibility:<br>Articles available in full text to ensure a thorough evaluation of methodology and findings.<br>• Interventions:<br>Studies that assess training or exposure to narrative medicine (e.g., storytelling, narrative ethics) or visual art analysis (e.g., discussions on visual thinking strategies, reflective art-based practices).<br>• Outcomes:<br>Studies reporting outcomes related to empathy, comprehension, emotional intelligence, compassion, sympathy, or other interpersonal and emotional skills, that focus on assessing the impact on patient-doctor relationships or broader implications for patient care and also articles that aim to study, reflect and fill the existent gaps on these topics. | • Studies that have similar outcomes but done for different populations (such as other areas of healthcare like dentistry, nursing, pharmacy and so on).<br>• Articles published in other languages other than English.<br>• Grey literature results<br>• Duplicated articles<br>• Date:<br>Articles that even though have similar purposes and outcomes were published before 2020 or yet to be published.<br>• Studies that do not specifically address narrative medicine, visual art analysis, comparable interventions.<br>• Studies that use other types of artistic methods other than the ones mentioned.<br>• Studies with vague or unrelated outcomes that cannot inform your research question. |

## 2.5 Search Strategy

A comprehensive search was conducted across three databases—PubMed, Scopus, and Web of Science.

- PubMed (https://pubmed.ncbi.nlm.nih.gov/)
- Scopus (https://www.scopus.com/)
- Web of Science (https://www.webofscience.com/)

The primary search strategy was formulated based on keywords and MeSH terms (71) relevant to the topic, including "Narrative Medicine", "Art"(MeSH), "Visual Art", "Empathy"(MeSH), "Compassion", "Sympathy" and "Emotional Intelligence"(MeSH). Boolean operators and database-specific adjustments were employed to refine the search. The initial search yielded a total of 6,877 results (PubMed: 1,548; Scopus: 3,880; Web of Science: 1,449).

### 2.5.1 PubMed

The search string used in PubMed incorporated MeSH terms and other relevant keywords:

(("Narrative Medicine"[Mesh]) OR "Narrative Medicine" OR "narrative therapy" OR "narrative therapeutics" OR "narrative therapies" OR "narrative based medicine" OR "narrative medicine technique" OR "narrative medicine techniques" OR "narrative ethics" OR "narrative Ethic" OR ("Art"[Mesh]) OR "art" OR "arts" OR "visual art" OR "visual arts" OR "visual thinking" OR "visual thinking strategy" OR "visual thinking strategies") AND ("empathy" OR "compassion" OR "sympathy" OR "emotional intelligence") NOT (("antiretroviral therapy" OR "assisted reproductive techniques" OR "HIV" OR "Heart failure" OR "narrative" OR "narratives" OR "state of the art" OR "state of art"))

Filters were applied to include:

- Publications between 2020 and 2024
- Free full text availability
- English language
- Human studies
- Exclusion of preprints

This process reduced the results to 190 articles.

### 2.5.2 Scopus

For Scopus, the search string was adjusted to remove MeSH terms because they're specific to PubMed/Medline.

("Narrative Medicine" OR "narrative therapy" OR "narrative therapeutics" OR "narrative therapies" OR "narrative based medicine" OR "narrative medicine technique" OR "narrative medicine techniques" OR "narrative ethics" OR "narrative Ethic" OR "art" OR "arts" OR "visual art" OR "visual arts" OR "visual thinking" OR "visual thinking strategy" OR "visual thinking strategies") AND ("empathy" OR "compassion" OR "sympathy" OR "emotional intelligence")

- Filters applied included:
- Publication years: 2020–2024
- Final publication stage
- Specific subject areas: Medicine
- Document types: Articles, Reviews, and Conference Papers
- Exclusion of specific keywords related to HIV, epidemiology, and nonhuman studies

This process resulted in 86 articles.

### 2.5.3 Web of Science

The search string used in Web of Science mirrored that of PubMed, as Web of Science supports external controlled vocabularies like MeSH to enhance search accuracy. Unlike Scopus, Web of Science is designed to cater to a broader research audience by supporting various terminologies, including MeSH terms, to facilitate seamless cross-database searching.

The following filters were applied:

- Publication years: 2020–2024
- Languages: English
- Categories: Medicine, Arts, Psychology, Neurosciences, and related fields
- Document types: Articles, Reviews, and Proceedings Papers
- Open access only

This process yielded 137 articles.

Data Management:

The results from all databases were combined, yielding 6,877 articles.

After applying database-specific filters, 413 articles remained. These were imported into Rayyan software (https://www.rayyan.ai/) for duplicate detection, which identified and removed 90 duplicate entries, leaving 365 unique articles.

## 2.6 Screening Process

### 2.6.1 Tool for Screening:

The Rayyan software (mentioned above on "data management") was also used to facilitate the initial phases of the screening process – The evaluation of titles and abstracts.

This tool ensured consistency and efficiency in the review process, enabling systematic tracking of decisions.

This multi-phase approach allowed for the systematic narrowing of studies from the initial pool (413/365) to those deemed eligible based on the predefined criteria.

The final selection of articles included in the systematic review was determined after a thorough full-text analysis.

### 2.6.2 Screening:

1. **Title Screening**: In this phase, the titles of all 365 articles obtained after duplicate removal were reviewed and screened to assess their relevance based on the inclusion and exclusion criteria. Titles that did not align with the study's objectives, such as studies unrelated to narrative medicine, visual art analysis, or emotional and interpersonal skills, were excluded at this stage.

   Following this step, 260 articles were excluded, leaving 105 articles for further evaluation. This phase was conducted systematically to ensure consistency and accuracy and that only potentially relevant studies progressed to the next stage.

2. **Abstract Screening**: Abstracts of the remaining articles (105) were evaluated for eligibility, meaning, to determine their alignment with the inclusion and exclusion criteria. This screening phase focused on identifying studies that:

   - Described interventions involving narrative medicine or visual art analysis.

- Reported outcomes related to empathy, emotional intelligence, or interpersonal skills.
- Included medical students or practicing physicians as participants.

Abstracts that clearly failed to meet these criteria (70) were excluded. A total of 35 articles were deemed eligible to proceed to the full-text review.

3. **Full text Review:** During this stage, the full texts of the 35 articles identified during the abstract screening were thoroughly assessed for compliance with all eligibility criteria. This phase involved evaluating the studies in detail to ensure they addressed the research question comprehensively and aligned with the review's objectives. Specific attention was given to the appropriateness of the study population, interventions, outcomes, and overall relevance to the systematic review.

   Following this review, 21 articles were selected for inclusion in the final analysis. Reasons for excluding articles at this stage were documented and included factors such as missing or incomplete outcomes, use of an inappropriate population, study designs that did not meet the inclusion criteria, or interventions unrelated to narrative medicine or visual art analysis. This thorough review process ensured that only relevant studies were included in the final synthesis, maintaining the rigor and transparency required for systematic reviews.

   The fully read articles were imported into the Mendeley Desktop software (72).

   The PRISMA data flowchart (62, 69) (PRISMA diagram of the study selection process) summarizes the stages of article selection and the characteristics of the excluded studies and is presented in the following sub-section.

### 2.6.3 Prisma Flowchart of data

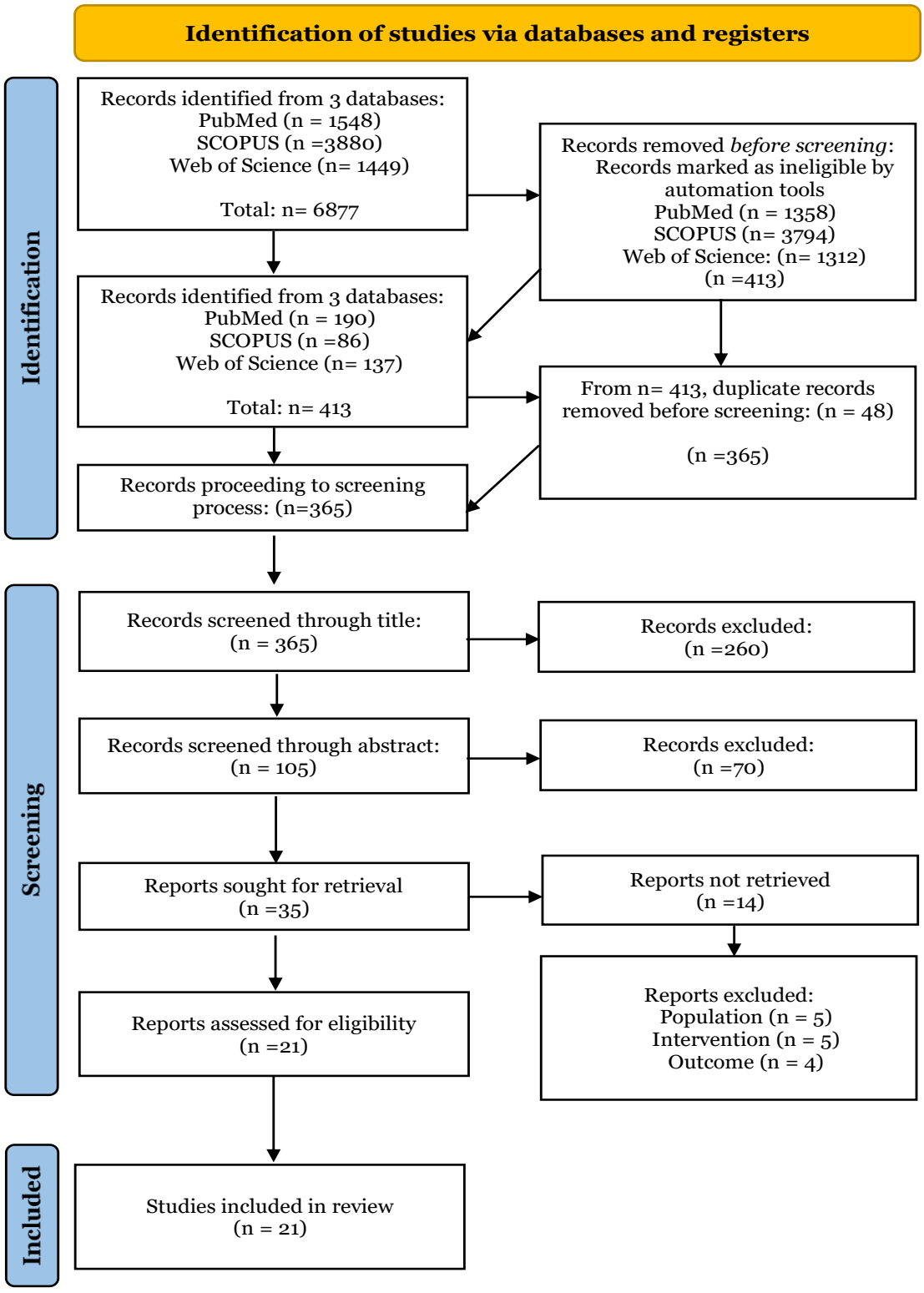


Figure 2.1 : Prisma diagram of the screening process

## 2.7 Data Extraction, Quality Assessment, and Risk of Bias Evaluation

To ensure the rigor and reliability of the studies included in this systematic review, a comprehensive quality assessment and risk of bias evaluation was conducted. Given the diversity in study designs, different appraisal tools were employed to assess each study appropriately. The use of a single tool for all studies would have led to methodological inconsistencies, as different study types present distinct risks of bias and methodological concerns.

Therefore, the following validated tools were used:

**Randomized Controlled Trials (RCTs) [Article: 5]:**

Assessed using the Cochrane Risk of Bias 2 (RoB 2) tool (64), which evaluates bias in key domains such as randomization, blinding, allocation concealment, and attrition.

**Non-Randomized and Quasi-Experimental Studies [Articles: 3, 7, 10, 11, 14, 15, 17, 20]:**

Evaluated using ROBINS-I (Risk of Bias in Non-Randomized Studies of Interventions) (65), designed to capture selection bias, confounding variables, and deviations from intended interventions.

**Observational Studies (Cohort, Case-Control, Cross-Sectional) [Article: 4]:** Assessed using the Newcastle-Ottawa Scale (NOS) (66), which examines selection methods, comparability of groups, and outcome assessment.

**Systematic Reviews and Meta-Analyses [Articles: 1, 2, 9, 18, 19]:**

Evaluated using the JBI Critical Appraisal Checklist for Systematic Reviews (67) to ensure methodological transparency, robustness of search strategies, and appropriateness of data synthesis.

**Qualitative Studies [Articles: 12, 13, 21]:**

Assessed using the Critical Appraisal Skills Programme (CASP) Qualitative Checklist (68), which examines trustworthiness, credibility, and relevance of the study findings.

**Opinion Pieces and Conceptual Frameworks [Articles: 6, 8, 16]:**
These were marked as Not Applicable for formal quality assessment, as they do not follow empirical research methodologies.

By employing assessment tools tailored to each study type, this review ensures fair and accurate quality evaluation, minimizing the risk of misclassification or misleading conclusions.

Unlike RCTs, observational, or qualitative studies, which collect and analyze data systematically, Articles 6, 8, and 16 consist of theoretical discussions, expert opinions, or conceptual frameworks. Because of this, they are Not Applicable for formal quality assessment, as they do not follow empirical research methodologies. Additionally, due to their classification as "Opinion Pieces and Conceptual Frameworks," these studies do not present measurable data, interventions, or study participants, making it impossible to assess the risk of bias. However, due to their valuable contributions, they were still included in this review to provide context and theoretical insights.

The results of this quality assessment and risk of bias evaluation are presented in the following table.

Table 2.2 – Data extraction, quality assessment and risk of bias evaluation.

| | Article Title | Author and publishing date | Study Design | Quality Appraisal Tool | Risk of Bias Assessment | Quality Score |
|---|---|---|---|---|---|---|
| **1** | Use and effectiveness of the arts for enhancing healthcare students' empathy skills: A mixed methods systematic review (73) | Levett-Jones et al. (2024) | Systematic Review (Mixed Methods) | JBI Critical Appraisal Checklist for Systematic Reviews | Low risk - Well-reported methods, moderate heterogeneity | High (9/11 criteria met) |
| **2** | Visual Thinking Strategies in medical education: a systematic review (74) | Cerqueira et al. (2023) | Systematic Review | JBI Critical Appraisal Checklist for Systematic Reviews | Moderate risk - Some inconsistencies across included studies | Moderate (7/11 criteria met) |
| **3** | An Empathy and Arts Curriculum During a Pediatrics Clerkship: Impact on Student | Neeley et al. (2024) | Quasi-Experimental Study | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Selection bias and lack of blinding | Moderate (5/7 criteria met) |

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| | Empathy and Behavior (75) | | | | | |
| **4** | Empathy and cultural competence remains stable for medical students: do the humanities have an effect? (76) | Srinivasan et al. (2024) | Observational Cohort Study | Newcastle-Ottawa Scale (NOS) | Low risk - Strong methodology, good follow-up rate | High (8/9 criteria met) |
| **5** | Visual arts in the clinical clerkship: a pilot cluster-randomized, controlled trial. (77) | Strohbehn et al. (2020) | Cluster-Randomized Controlled Trial (RCT) | Cochrane Risk of Bias Tool (RoB 2) | Moderate risk - Some attrition bias, but randomization process clear | Moderate (6/9 criteria met) |
| **6** | Creating empathetic doctors through art: art-based teaching as a tool for understanding the patient experience, such as miscarriage. (78) | Smith et al. (2021) | Commentary/Opinion Piece | Not applicable | Not assessed | Not applicable |
| **7** | Nurturing Empathy through Arts, Literature, and Role Play for Postgraduate Trainees of Ophthalmology (79) | Bhagat et al. (2024) | Quasi-Experimental Study (Mixed Methods) | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Some confounding factors present | Moderate (6/9 criteria met) |
| **8** | The prism model: advancing a theory of practice for arts and humanities | Moniz et al. (2021) | Conceptual Framework | Not applicable | Not assessed | Not applicable |

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| | in medical education (80) | | | | | |
| **9** | Art in Medical Education: A Review (81) | Dalia et al. (2020) | Systematic Review | JBI Critical Appraisal Checklist for Systematic Reviews | Low risk - Comprehensive review with clear inclusion criteria | High (9/11 criteria met) |
| **10** | Narrative medicine workshops for emergency medicine residents: Effects on empathy and burnout (82) | Malik et al. (2023) | Quasi-Experimental Study | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Self-selection bias and no blinding | Moderate (5/7 criteria met) |
| **11** | Interprofessional Art Rounds (83) | Chang & Mosher (2023) | Interventional Study | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Lack of control group limits conclusions | Moderate (5/7 criteria met) |
| **12** | Impact of art and reflective practice on medical education in the emergency department (84) | Kovach et al. (2023) | Longitudinal Qualitative Study | CASP Qualitative Checklist | Low risk - Well-conducted qualitative methodology | High (9/10 criteria met) |
| **13** | Empathy in Medical Education: Its Nature and Nurture — a Qualitative Study of the Views of Students and Tutors (85) | Laughey et al. (2021) | Qualitative Study | CASP Qualitative Checklist | Low risk - Strong thematic analysis and participant diversity | High (8/10 criteria met) |
| **14** | HAPPE-A pilot Programme using humanities to teach junior doctors empathy in a palliative | Ong (2021) | Pilot Study (Non-Randomized) | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Small sample size, no control group | Moderate (5/7 criteria met) |

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| | medicine posting (86) | | | | | |
| **15** | Using Visual Arts Education and Reflective Practice to Increase Empathy and Perspective Taking in Medical Students (87) | Rezaei et al. (2023) | Quasi-Experimental Study | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Some confounding factors present | Moderate (6/9 criteria met) |
| **16** | Lessons in stories: Why narrative medicine has a role in pediatric palliative care training (88) | Lanocha (2021) | Opinion Piece | Not Applicable | Not assessed | Not applicable |
| **17** | The use of creative writing and staged readings to foster empathetic awareness and critical thinking (89) | Freeman & Phillips (2021) | Mixed-Methods Study | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Mixed methods but potential for bias | Moderate (5/7 criteria met) |
| **18** | AfterWards: A Narrative Medicine Program at Johns Hopkins Medicine and in China (90) | Small (2023) | Review of Narrative Medicine Program | JBI Critical Appraisal Checklist for Systematic Reviews | Low risk - Well-structured review with clear inclusion criteria | High (9/11 criteria met) |
| **19** | Historical empathy and medicine: Pathography and empathy in Sophocles' Philoctetes (91) | Kampoureli (2022) | Literature Review | JBI Critical Appraisal Checklist for Systematic Reviews | Low risk - Good review methodology, potential for selection bias | High (8/10 criteria met) |

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| **20** | My Life, My Story: Integrating a Life Story Narrative Component Into Medical Student Curricula (92) | Lam et al. (2022) | Interventional Study | ROBINS-I (Risk of Bias in Non-Randomized Studies) | Moderate risk - Lack of randomization, potential self-report bias | Moderate (6/9 criteria met) |
| **21** | Insight from a novel humanities-based education intervention to teach empathy to internal medicine residents locally (93) | Ong (2022) | Qualitative Study | CASP Qualitative Checklist | Low risk - Strong qualitative analysis with diverse participants | High (9/10 criteria met) |

Given the heterogeneity in the study designs included it would be, not only incorrect, but also somehow fallacious, let's say, to perform direct numerical comparisons of quality assessment scores since it could lead to inaccurate and misleading interpretations.

So, in order to address this "issue", a common quality scale was established, categorizing studies as **high**, **moderate**, or **low** quality based on their respective assessment tool criteria.

This standardized classification ensures that if direct comparisons are needed, they remain methodologically sound and fair.

To ensure rigor and consistency, the following approach was applied:

1. **Grouping Findings by Study Design:**
   Results are reported separately for RCTs, non-randomized studies, observational studies, systematic reviews, and qualitative research to ensure that comparisons are made within methodologically similar groups.
2. **Using the Common Quality Scale:**
   All studies were classified as high, moderate, or low quality, allowing for standardized evaluation across different methodologies.
3. **Narrative Synthesis Over Direct Numerical Comparison:**
   When discussing study quality, emphasis is placed on contextual strengths and limitations rather than absolute numerical differences.

Considering this, the following table (2.7.2) will provide a standardized classification that makes direct comparisons across study types possible while preserving methodological validity.

Table 2.3 - Standardized article classification

| Study Design | Quality Scale Category | Articles |
|---|---|---|
| RCTs | Moderate Quality | 5 |
| Non-Randomized & Quasi-Experimental Studies | Moderate Quality | 3, 7, 10, 11, 14, 15, 17, 20 |
| Observational Studies | High Quality | 4 |
| Systematic Reviews & Meta-Analyses | High to Moderate Quality | 1, 2, 9, 18, 19 |
| Qualitative Studies | High Quality | 12, 13, 21 |
| Opinion Pieces & Conceptual Frameworks | Not Applicable | 6, 8, 16 |

By presenting the results this way, we are not only able to properly assess the quality and risk of bias of each study according to its specific methodological characteristics (Table 2.2) but also provide a common quality scale (table 2.3) that allows for direct comparison if needed, even between studies with different designs.

Shortly, this approach avoids inappropriate comparisons between methodologically distinct research designs while simultaneously providing a standardized framework that enables comparisons across all included studies, regardless of their study type or design.

# 3. Results

The 21 studies included in this systematic review were conducted across a range of geographical locations, with a predominance in North America (USA and Canada) and Europe (UK, Germany, and other Western European countries). A smaller number of studies were conducted in Australia and Asia (India and other countries in the region), highlighting an increasing global interest in integrating arts and humanities-based interventions into medical education. However, there was a notable gap in research from South America, Africa, and the Middle East, indicating potential areas for further exploration.

Most studies concentrated on medical students, particularly those in their pre-clinical and clinical years, reflecting a strong emphasis on integrating arts-based interventions early in medical training. Among these, undergraduate medical students in their first to third years were the most frequently studied group, as this stage is crucial for developing foundational skills in observation, empathy, and communication.

Additionally, a significant number of studies included clerkship students (third- and fourth-year medical students), as interventions at this stage aimed to enhance clinical empathy and patient communication, both essential for direct patient interactions.

Fewer studies focused on postgraduate trainees and residents, but when they did, they often targeted internal medicine, emergency medicine, dermatology, and ophthalmology—specialties where strong observational and interpersonal skills are critical. These studies explored how arts-based methods could refine diagnostic accuracy, emotional intelligence, and resilience among practicing physicians.

The studies utilized various arts and humanities-based interventions to enhance medical training. Visual Thinking Strategies (VTS) and fine art analysis were commonly used through museum visits, classroom discussions, and digital platforms, aiming to improve observational skills, diagnostic accuracy, and perspective-taking.

Narrative medicine and reflective writing included activities such as reading patient stories, journaling, and storytelling exercises, focusing on emotional engagement, self-awareness, and professional identity formation.

Theater-based interventions, including role-playing, improvisation, and staged readings, were designed to enhance communication, active listening, and emotional intelligence. Poetry and literature-based interventions encouraged emotional processing, cultural competency, and patient-centered reflection through activities like poetry reading, literature discussions and analysis.

Some interventions followed a hybrid model, combining visual arts, storytelling, and role-playing to engage multiple senses and learning styles, supporting self-reflection, clinical empathy, and observational precision.

The studies consistently demonstrated that arts and humanities-based interventions had a positive impact on medical students' observational skills, empathy, and self-reflection. Programs incorporating visual thinking strategies and fine art analysis improved students' ability to recognize patterns, think critically, and enhance diagnostic accuracy, particularly in visually intensive specialties such as radiology, dermatology, and ophthalmology. Studies that included control groups showed clear improvements in observational precision.

Interventions involving narrative medicine and reflective writing fostered a deeper understanding of patient perspectives and emotions, contributing to increased self-perceived empathy. While many participants reported feeling more connected to their patients, objective measures of empathy change varied across studies. Exposure to abstract and complex artistic works also played a role in helping medical trainees become more comfortable with clinical uncertainty, with several studies showing measurable improvements in their ability to navigate ambiguity in decision-making.

Additionally, arts-based interventions encouraged self-reflection and professional identity formation, as students engaged in literature discussions, creative writing, and personal storytelling to process their clinical experiences. While some programs demonstrated sustained benefits, others noted that engagement declined over time, particularly when interventions were not integrated longitudinally.

Despite these positive effects, the long-term impact of these interventions remained inconsistent, and differences in measurement methods made comparisons across studies challenging. Some students expressed skepticism about the practical relevance of arts-based learning, particularly when faced with the pressures of scientific and clinical training. Limited time and difficulties integrating these approaches into medical curricula also influenced participation and institutional support, shaping the overall effectiveness of these programs.

Table 3.1 - Extracted data and results for each article:

| Title | Year and Country | Population | Intervention | Aim | Results |
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| Use and effectiveness of the arts for enhancing healthcare students' empathy:<br>A mixed methods systematic review | 2024, Malaysia, Israel, Spain, Sweden, Canada, Hong Kong, Korea, Iran, USA, Turkey, UK, China | 1st, 3rd, 4th and 5th year medical students<br>And<br>1st year interns<br>Total:<br>(n=426) | - Group based discussions and reflection of visual arts: Paintings, both classic and contemporary and photography.<br>- Visual arts: 90 minute lecture and discussion about 5 images related to sickness and death using visual thinking strategies approach.<br>- 3 hour workshop of poetry, writing and art finalized with a written reflective essay.<br>- Observation of art pieces done by other students and creation of own art works based on the emotions felt during 1st observation.<br>- Creative writing: "Love and breakup letters to empathy" and reflective thematic analysis in group of the letters<br>- Film watching and reflection ("*The Doctor*") together with a communication skills workshop | To identify, critically appraise and synthesize evidence of the use and effectiveness of the arts for enhancing pre-registration/<br>prelicensure healthcare students' empathy skills | **- Improved:**<br>**1**. understanding of the need for comprehensive care for compromised patients;<br>**2.** observational and critical thinking skills;<br>**3.** Improved attitudes and empathy towards patients.<br>**- Enhanced:**<br>**1**. Ability to feel others suffering<br>**2.** Their acceptance<br>**3.** Ability to develop reflective thinking skills and how to perceive people living with certain diseases such as HIV e.g.<br>**4.** Understanding of concepts such as dignity, stigma and social exclusion.<br>**-Reduced:**<br>**1.** Prejudice regarding stigmatized diseases.<br>**- Helped:**<br>**1.** To consider different points of view.<br>**2.** Understand the importance of providing humanized care<br>**3.** Understand the need to identify discriminatory behaviours.<br>**- Promoted:**<br>**1.** self-reflection regarding own empathy skills<br>**2.** Self-understanding and limitations of own cultural awareness. |

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| Visual Thinking Strategies in medical education: a systematic review | 2023, Portugal | 1st to 3rd year medical students and practitioners (Dermatology residents, ophthalmology residents (n=482) | Visual Thinking Strategies (VTS) courses<br><br>(Both elective and mandatory):<br><br>- In classroom settings<br><br>- Art museums<br><br>(Museum of Fine arts Boston e.g.)<br><br>- Art galleries<br><br>- Street Art | Critically analyze the available evidence of the effectiveness of VTS in medical education to guide future research and provide a framework to adapt medical curricula. | **Increased:**<br><br>1. Clinical (and general) observational skills<br><br>2. Use of fine arts concepts linked to physical findings in descriptions of clinical images<br><br>3. tolerance for ambiguity and positive views toward healthcare professional communication skills<br><br>4. Scope of interpretations, use of speculative thinking, and visual analogies on descriptions.<br><br>5- Mindfulness and clinical observation skills on student feedback<br><br>6- Acceptance of multiple meanings namely tolerance of ambiguity.<br><br>7- Ability to feel the suffering of others and on teamwork.<br><br>8- Vocabulary and descriptive ability for clinical material.<br><br>9- Clinical confidence and professional development across managing ambiguity, communication, respect, and reflective practice (Higher impact on female participants)<br><br>10- Understanding of radiologist's clinical role and reducing negative stereotypes towards radiology and their professionals.<br><br>11- Detection of visual elements, attention to descriptive detail, awareness of assumptions and acceptance of multiple possible meanings. |

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| | | | | | 12- Understanding for visual biases and appreciation for deep looking and mindfulness aspects of humanities curriculum. |
| An Empathy and Arts Curriculum During a Pediatrics Clerkship: Impact on Student Empathy and Behaviour | 2024, Nashville, Tennessee, USA | Medical students in pediatric clerkship<br><br>Enrolled in the curriculum (n=34)<br><br>Control group (n=19)<br><br>Total<br><br>(n=58) | E&AC Curriculum during pediatrics clerkship:<br><br>2-hour empathy and visual arts curriculum (E&AC) preceded and followed by:<br><br>1. Toronto empathy questionnaire (TEQ)<br><br>2. Empathy Behavior checklist (EBC)<br><br>3. Self-reports on empathy and empathetic behaviors.<br><br>Comparison of results before and after the intervention. | Teach, underscore, and nurture empathy within clinical medicine by highlighting observation skills to identify patient emotions and discussing actions, dialogue, and behavior that could improve empathic student behaviors within the clinical setting. Our goal was to enhance empathy and reduce | Students stated that they learned helpful observation skills and that they became more comfortable using skills clinically.<br>Participants also reported gaining new empathetic strategies such as “naming emotions, probing emotions and validation”.<br><br>1. TEQ<br><br>81% completed pre/post TEQs Overall there were no statistically significant differences noted pre and post TEQs from curriculum and control groups.<br><br>7 Students (15%) had initial scores lower than 45 meaning, under average empathy levels, and within that group the pre/post results compared to the control group were indeed significant.<br><br>TEQ results suggest that this curriculum may be more valuable to target on students whose empathy scores and emphatic skills are lower than average.<br><br>2. EBC<br><br>28 Students (48%) completed the pre/post EBC.<br><br>16 Students (57%) were part of the curriculum group and 12 (43%) were the control group. Mostly and on the overall empathy scores there was no significant difference between |

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| | | | | empathy decline during clinical training years. | Pre/post EBC results between curriculum and control group.<br>There was only a significant difference for those who "self-reported exploring more about the child/family's experience". However, only 3 students completed the Pre/post EBC-Patient and Family so the statistical analysis was not possible to complete.<br>Increased empathy and communication skills, especially with pediatric patients. |
| Empathy and cultural competence remains stable for medical students: do the humanities have an effect? | 2024, Camden, New Jersey USA | Preclinical Medical students (n=120) | Observational Art course consisting of: 12 hours of gallery-based class involving Visual thinking strategies and bias identification. This proportionated addressing emotional intelligence, discussion of different interpretations and reflections of each work of art.<br>Each class had 20 student per semester.<br>Performed from 2016 to 2019 annually | Using 3 different tools to measure pre and post course longitudinal impact on student's empathy:<br>**1.**The Jefferson Scale of Empathy.<br>**2**. The Jeffrey Transcultural Self-Efficacy Tool.<br>**3.** The Budner Tolerate for Ambiguity tool. | **1.** JES showed no significant changes during from students of different medical years.<br>(M1=120, M2=116, M3=119.5 and M4=118.5)<br>P= 0,374 on Friedman Test<br>Empathy scores on JES remained stable and high during the 4 years of medical education.<br>**2.** TSET showed a very slight increase but statistically not significant (P< 0.001 on Friedman test)<br>**3.** TOA showed significant improvement on scores post course<br>In general, there was an improved transcultural self-efficacy and a direct post humanities course improvement in tolerance for ambiguity .<br>Over the 4 years the course was implemented 2 of the 3 scales used had positive outcomes on self-efficacy suggesting that there was an improvement in their confidence on both cognitive and practical aspects of competency specially on populations from different cultures and backgrounds. |

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| Visual arts in the clinical clerkship: a pilot cluster-randomized, controlled trial | 2020, Michigan, USA | Medical students in clinical clerkship<br><br>Pre-randomization surveys (n=39)<br><br>Post-Intervention surveys (n=34) | Pre and post interventions assessment from February to may, 2018<br>3 sessions facilitated by a trained academic art educator with prior experience collaborating with medical professionals.<br>Random positioning of students on intervention place/group between:<br>Museum-based art intervention (MA)<br>Hospital Based Art Intervention (HA)<br>Case-Based Control intervention (CBC) | Assess the possibility and potential benefits of integrating the visual arts into an intense, graded, core internal medicine clinical clerkship. | Increased implicit bias cognizance and time for reflection, but no significant differences in psychometric or educational outcomes were identified.<br><br>Most students felt positively toward the experience finding them “calming and relaxing” and an opportunity to reflect and think in a different way from the usual medical context making it easier to understand their own limitations.<br><br>However, some experienced distress from missed clinical time and also its impact on evaluations.<br><br>Finally, some stated that these interventions were a positive reminder of the idea of mindfulness and self-care. |
| Creating empathetic doctors through art: art-based teaching as a tool for understanding the patient experience, such as miscarriage | 2021, London, UK | Medical students and clinicians | Art-based education and interventions using miscarried related art pieces or art pieces perform post a miscarriage (Frida Kahlo e.g.) | Use art-based teaching to create a bigger understanding of the reality of sensitive topics such as miscarriage and improving empathy reactions | Increased understanding and empathy toward emotionally charged patient experiences.<br><br>It was also related that such heavy topics had a negative impact on students emotionally.<br><br>Women who have experienced this or similar experiences also delt differently since it brought tough memories.<br><br>However, the final conclusion is that these interventions have statistically a positive outcome in empathy levels and understanding different realities such as miscarriage. |

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| | | | | towards those situations | |
| Nurturing Empathy through Arts, Literature, and Role Play for Postgraduate Trainees of Ophthalmology | February 2024, India and USA | Postgraduate ophthalmology trainees (n=79) | -Four workshops comprising of interactive lectures, literature, creative arts, and role plays provided by trained facilitators. Data from surveys for:<br>- Trainee self-assessment,<br>-Patient perception of trainee empathy,<br>-Pre-post knowledge test,<br>And<br>-Trainee and facilitator feedback<br>Was collected and analysed. Follow-up assessment at 3 months to measure retention of empathy improvements. | To develop, implement, and evaluate a structured empathy education module for ophthalmology postgraduate trainees in India. | **1-Improvement in Empathy and Knowledge Post-Training**<br>-Trainee self-assessment of empathy improved significantly:<br>• General empathy scores ranged from 38 to 67 (mean = 53.13), exceeding the desired score (52).<br>• Clinical empathy scores improved from a mean of 29 to 34 (desired score = 29).<br>-Pre-workshop knowledge test (median score = 11.25/20) significantly improved post-workshop -» (median = 13/20; $p < 0.00012$).<br>-Three-month follow-up showed sustained empathy improvements ($p < 0.00001$).<br>**2- Role-Play and Art-Based Learning Were the Most Impactful**<br>• Role-plays and art-based exercises were rated as the most engaging and effective tools.<br>• Facilitators and trainees described these activities as “eye-opening” and crucial for empathy training.<br>• Trainees reported an increased ability to understand patient emotions, suffering, and perspectives. |

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| | | | | | **3- Patient Perceptions of Empathy Showed Room for Improvement:**<br>• 79 patients evaluated trainee empathy on a scale of 0–5 (median score = 3).<br>• Most common patient complaint: Trainees did not spend enough time with them.<br>• Despite empathy training improvements, workload constraints continued to limit patient interactions.<br>**4- Demographic Insights and Statistical Analysis:**<br>• Females scores were slightly higher than males but not statistically relevant<br>• Senior trainees (third-year residents) had higher empathy scores than second-year trainees (p = 0.02429) |
| The prism model: advancing a theory of practice for arts and humanities in medical education | 2021,<br>USA | Medical educators and students | Theoretical Framework Development<br>Discursive and conceptual analysis of 769 published works for their epistemic position on "how arts are framed in relation to medicine?" and epistemic function, "what arts are used to achieve in medical education".<br>15 stakeholder interviews with educators, administrators, artists, museum educators, medical learners, and scholars and | To propose a theoretical model (PRISM) for integrating arts and humanities into medical education practices | **1. Discursive Position of Arts and Humanities in Medical Education**<br>• The majority of literature positioned arts and humanities as "additive" to medicine.<br>• Less frequently, they were framed as "curative" (a tool to fix issues in medical training).<br>• Few works positioned arts and humanities as "intrinsic" to medicine, meaning fundamental to medical practice itself.<br>• Stakeholders lamented the "additive" perception, arguing that arts and humanities should be recognized as integral to medical training.<br>**2. Refinement of Epistemic Functions:** |

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| | | | comparison with a 2016 framework that categorized arts and humanities as intrinsic, additive, or curative to medicine and as serving skills mastery, perspective-taking, or personal growth and activism. | | **The Prism Model**<br>» The **previous model** categorized arts and humanities into 3 functions:<br>**1- Mastering skills** (e.g., communication, observation).<br>**2- Perspective-taking** (e.g., empathy, relational skills).<br>**3- Personal growth & activism** (e.g., self-awareness, social justice engagement).<br>» The **refined Prism Model** expands this to 4 distinct functions:<br>**1- Mastering skills:** Enhancing practical competencies like communication and observation.<br>**2- Perspective-taking:** Encouraging relational and empathetic understanding.<br>**3- Personal insight:** Developing emotional intelligence, professional identity, and self-awareness.<br>**4- Social advocacy:** Addressing systemic inequities and fostering social justice in healthcare.<br>The Prism Model allows educators to choose functions based on their goals and institutional culture, rather than forcing arts and humanities into a single framework.<br>**3. Stakeholder Insights and Challenges**<br>• **Concerns about the "Additive" Perception:** |

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| | | | | | -Arts and humanities are often seen as "enrichment" rather than essential.<br>-They are not well-integrated into curricula, often treated as optional electives.<br>-There is limited institutional support, funding, and recognition for arts-based education.<br>• **Tension Between Practical and Transformative Uses:**<br>-Some stakeholders worry that focusing only on skill development (e.g., communication skills) limits the deeper potential of the humanities.<br>-Many advocated for greater emphasis on arts as tools for social critique and change in medicine.<br>• **Social Advocacy as an Emerging Theme:**<br>-Stakeholders highlighted the role of arts in raising awareness of health disparities, systemic bias, and social justice issues.<br>-There was a strong call for medical educators to expand arts-based learning beyond individual empathy to structural transformation.<br>**4. Implications for Medical Education**<br>- The Prism Model encourages flexible, intentional integration of arts and humanities based on specific educational aims.<br>- Moving beyond skill-building: While observation and communication skills remain important, educators should |

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| | | | | | also use arts for critical thinking, identity formation, and advocacy.<br>- Addressing institutional barriers: Arts-based education needs stronger institutional buy-in, funding, and faculty training to be effectively implemented. |
| Art in Medical Education: A Review | 2020,<br>Global review | Medical students and practitioners | Integration of art into medical curricula through study of the best Practices for Art-Based Medical Education | To review the integration of art-based methodologies in medical education and their impact on clinical skills | **1- Art Education Enhances Observational Skills in Medical Students**<br>• 4 out of 12 studies used control groups, and 3 of these showed a statistically significant increase in observational accuracy.<br>• Two studies found a dose-dependent response—more art sessions led to greater improvement in observational skills.<br>• Key studies showed:<br>Improvements in both objective observation and interpretation of facial expressions, increased tolerance for ambiguity, even more than they improved visual skills and that students make fewer observational mistakes after fine art interventions.<br>**2- Empathy & Emotional Awareness Improvements:**<br>• Medical students reported increased emotional intelligence and mindfulness after engaging art; |

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| | | | | | • Understanding of patient narratives improved, suggesting enhanced perspective-taking and communication skills and;<br>• Students showed higher satisfaction and appreciation for art-based learning and advocated for its continued use in medical education.<br><br>**3- Fine Art in Residency Training**<br>• Fewer studies focus on residents (12 total), and only **3** used control groups.<br>**1 out of those 3** control-groups showed statistically significant observational skill improvement.<br>• Harvard's Dermatology Residency Program: Used VTS-led museum sessions to improve visual literacy, diagnostic accuracy, and recognition of observational biases where the Residents took pre- and post-tests evaluating observational ability. The results were related to dose-dependent effect: Those who attended 3+ sessions showed significant improvement ($p < 0.034$), while those with fewer sessions did not. |
| Narrative medicine workshops for emergency medicine residents: Effects | 2023,<br><br>Boston, Chicago and Illinois, | Emergency medicine residents<br><br>(n=48) | Two Narrative medicine workshops in which activities consisted of: | To evaluate the impact of Narrative Medicine (NM) workshops on burnout and | **1-Narrative Medicine Slowed Burnout Progression but Did Not Improve Empathy.**<br>• Burnout increased over time in all residents, but those in the NM group showed a less severe increase ($p < 0.001$). |

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| on empathy and burnout | USA | | Close reading of literary texts, reflective writing, and group discussions. | empathy in Emergency Medicine (EM) residents and assess resident perceptions of the workshops. | **2- High Feasibility and Resident Support for NM Workshops**<br>100% participation rate from intervention residents (48/48) and 50% (24/48) completed post-intervention feedback from which:<br>• 83.3% (20/24) wanted NM to become a standard part of EM training.<br>• 70.8% (17/24) found the 1-hour session length appropriate.<br>• 79.2% (19/24) approved of the 3-month interval between sessions.<br>In-person workshops were also preferred over virtual ones.<br>**3- Workshops Fostered Community-Building More than Empathy**<br>• Residents felt closer to each other after the workshops rather than closer to their patients.<br>• Reflective writing prompts focused more on physician experiences than patient narratives, possibly explaining the lack of empathy change.<br>• NM's strength may lie in emotional processing and peer support rather than direct empathy-building. |
| Interprofessional Art Rounds | 2023,<br>USA | First-year medical students | **Three-phase workshop:**<br>1- Observation (2-hour session): Guided VTS exercises on artworks, focusing on detail recognition and interpretation. | To assess the impact of Art Rounds, an interprofessional workshop | **1- Improvements in Clinical Observation and Interpretation:**<br>Students practiced diagnosing through visual analysis of art before applying the same techniques to patient assessment and identified and interpreted nonverbal cues (e.g., body |

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| | | | 2- Communication (out-of-class exercise): Applied VTS to real-world observations to enhance listening and noticing skills.<br>3-Assessment (4-hour simulation): Applied VTS in standardized patient (SP) encounters, including history taking and writing differential diagnoses. | using Visual Thinking Strategies (VTS) to improve observation skills, clinical assessment, and empathy in medical students. | language, eye contact) in standardized patients (SPs), reinforcing clinical observation skills.<br>**2- Standardized Patient Experience Was Highly Valued**<br>Students interviewed SPs, took medical histories, and established differential diagnoses based on visual and verbal clues.<br>SP feedback improved student awareness of how communication and observation affect patient interactions.<br>**3- High Self-Reported Improvements in Key Competencies**<br>Post-workshop evaluation (5-point Likert scale):<br>• Better acceptance of ambiguity: 4/5<br>• Improved visual observation: 4/5<br>• Enhanced active listening and teamwork: 4.5/5<br>• More effective patient assessment using VTS: 4/5 |
| Impact of art and reflective practice on medical education in the emergency department | 2023, Australia (n=123) however only 5 ended the program. | Medical students and Emergency medicine physicians (n=123) however only 5 ended the program. | Watching short film, *"The Art of the ED"*, at the beginning of the program and then again after their final clinical practicum. In the end participants did written reflections. | Explore the effectiveness of art-based pedagogy and reflective practice in medical education, particularly in | Arts-based pedagogy was found to be an effective tool for stimulating reflection, professional identity formation, and personal growth.<br>The study demonstrated that arts-based interventions help challenge implicit biases, promote holistic patient care, and facilitate transformative learning.<br>The use of visual media and guided reflection provided students with a structured approach to integrating the "art" and "science" of medicine. |

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| | | | | the emergency department (ED) setting | Findings support the inclusion of arts-based teaching strategies in medical curricula to enhance empathy, critical thinking, and emotional resilience. |
| Empathy in Medical Education: Its Nature and Nurture — a Qualitative Study of the Views of Students and Tutors | 2021,<br><br>Global review conducted in UK | Senior Medical students (n=13) and tutors (n=9) Total (n=22) | Narrative review of empathy training methods and interventions.<br><br>One to one semi structured interviews and reflexions with participants. | To explore the perceptions of students and tutors regarding empathy in medical education and how medical students and tutors perceive clinical empathy, its teaching, and the phenomenon of "empathy erosion" during medical training. | **1- Empathy Erosion:**<br><br>»Students and tutors **acknowledged a decline in empathy** as medical students progress through training.<br><br>»Students described becoming **more detached and emotionally guarded** to cope with workload and stress.<br><br>»Tutors recognized **institutional and systemic pressures** that may discourage empathy in favor of efficiency and professionalism.<br><br>**2- Nature vs. Nurture of Empathy:**<br><br>»Some students believed empathy is innate, while others emphasized the importance of training and reinforcement.<br><br>»Tutors noted that early role models and clinical exposure shape empathy levels in students.<br><br>**3- Barriers to Maintaining Empathy:**<br><br>»High workload and stress: Students struggled to maintain emotional engagement due to exhaustion.<br><br>»Clinical detachment: Some students perceived emotional distance as a protective mechanism to avoid burnout. |

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| | | | | | »Hidden curriculum: Tutors pointed out that observing negative role models or rushed consultations in clinical settings discourages empathetic behaviors.<br>**4- Facilitators of Empathy Development:**<br>»Role models: Having empathetic mentors and tutors was considered essential in maintaining empathy.<br>»Reflective practice: Structured reflection and narrative-based medicine exercises helped students reconnect with their empathetic side.<br>»Patient interactions: Direct, meaningful engagement with patients reinforced the importance of empathy.<br>**5- Teaching Methods to Enhance Empathy:**<br>»Use of humanities and art: Incorporating narrative medicine, literature, and visual art was seen as valuable in training students to observe, reflect, and connect with patients emotionally.<br>»Role-playing and standardized patients: Simulated patient interactions were considered useful but limited, as they sometimes felt artificial compared to real clinical encounters.<br>»Formal empathy training: Tutors and students agreed that empathy education should be integrated throughout the curriculum, rather than limited to preclinical years. |

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| HAPPE – A Pilot Programme Using Humanities to Teach Junior Doctors Empathy in a Palliative Medicine Posting | 2021,<br><br>Singapore | Junior doctors and Medical students | **Literature & Arts-Based Learning:**<br>Exposure to poetry, literature, paintings, and reflective writing.<br>**Narrative Medicine Techniques:**<br>Encouraging doctors to reflect on patient stories and their own emotional responses.<br>**Interactive Workshops:**<br>Role-playing and discussions on ethical dilemmas, suffering, and end-of-life care.<br>**Followed by:**<br>» Pre- and post-intervention surveys to assess changes in empathy levels.<br>» Qualitative feedback from participants. | To evaluate the impact of a humanities-based educational intervention on the empathy levels of junior doctors during a palliative medicine posting | »Increase in Empathy: Participants demonstrated improvement in empathy scores post-intervention.<br><br>»Enhanced Reflection & Emotional Awareness: Doctors reported greater awareness of patient suffering and their own emotional responses.<br><br>»Practical Application: Improved communication with terminally ill patients and their families.<br><br>»Positive Participant Feedback: Participants found the humanities-based approach engaging and beneficial for their personal and professional development.<br><br>**However:**<br><br>»Some participants initially felt unfamiliar or uncomfortable with humanities-based learning.<br><br>»Time constraints in clinical practice limited participation. |
| Using Visual Arts Education and Reflective Practice to Increase Empathy and Perspective Taking in Medical Students | 2023,<br><br>USA | First-year medical students (n=128) initially over five years. | Collaboration between Baylor College of Medicine (BCM) and the Museum of Fine Arts, Houston (MFAH) to introduce a Visual arts education and reflective practice during 4 weeks, conducted annually from 2017 to 2022 (except 2020). | To examine how visual arts education and reflective practices enhance empathy and | **1- Empathy & Perspective-Taking:**<br>• The IRI results showed a statistically significant increase in perspective-taking (mean increase: 19.0 to 20.2; $p < 0.0125$).<br>• No statistically significant changes were observed in the other three subscales of the IRI (fantasy, empathic concern, and personal distress). |

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| | | Concluded:<br>(n=89)<br>70% | Using Interpersonal Reactivity Index (IRI) and self-assessment surveys | perspective-taking | **2- Self-Assessment Survey:**<br>• **Positive Feedback:**<br>Over 80% of students rated the course positively on empathy, bias awareness, and ambiguity.<br>**and**<br>• **Thematic Analysis:**<br>Key themes included:<br>**-Observation Skills:** Improved ability to closely observe and analyze details.<br>**-Empathy Development:** Greater appreciation for patient perspectives.<br>**-Bias Awareness:** Recognizing and mitigating personal biases.<br>**-Educational Experience:** Positive reception of interactive learning with museum artwork.<br>**3- Pedagogical Impact:**<br>• Students highlighted the role of visual analysis and reflection in improving patient interactions.<br>• Virtual Learning (2021) vs. In-Person:<br>Virtual learning allowed easier access to artwork, but in-person sessions were preferred for engagement and appreciation of texture and depth. |

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| Lessons in Stories: Why Narrative Medicine Has a Role in Pediatric Palliative Care Training | 2021,<br>USA | Pediatric palliative care physicians | Narrative medicine approach | To explore the role of narrative medicine in training pediatric palliative care (PPC) physicians, focusing on its potential benefits for resilience, empathy, communication, ethics, cultural humility, and advocacy. | **Narrative Medicine as a Coping Tool:**<br>• The study emphasizes how narrative medicine can help physicians process emotions, reflect, and develop sustainable self-care strategies.<br>• It fosters resilience and reduces burnout by allowing physicians to express and reflect on difficult patient experiences.<br>**Development of Narrative Competence in Medical Training:**<br>• Reading literary texts improves doctors' ability to perceive and interpret patients' experiences.<br>• Reflective writing can aid in communication and self-awareness, helping physicians process their emotions after emotionally challenging encounters.<br>• The practice of storytelling enhances patient-doctor relationships and builds cultural humility by encouraging self-reflection on biases and perspectives.<br>**Effects on Empathy and Communication:**<br>• Studies cited in the paper show that exposure to narrative medicine courses can enhance Theory of Mind (ToM) and reduce depersonalization, leading to improved patient interactions.<br>• Medical students who underwent narrative training performed better in communication-based assessments. |

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| | | | | | **Practical Implementation in Palliative Care:**<br>• Incorporating narrative medicine in training can improve communication, increase ethical awareness, and foster interprofessional collaboration.<br>• The author suggests including literary scholars and artists in medical education to enhance students' narrative skills.<br>**Proposed Solutions for Integration into Medical Training:**<br>• Shorter and more frequent activities (e.g., daily reflective writing, storytelling workshops, literature discussions).<br>• Inclusion of pediatric-specific narrative practices, such as children's literature and poetry, to improve understanding of non-verbal patient cues.<br>• Programs like "My Life, My Story" in Veterans Health Administration hospitals show how patient-driven narratives can be incorporated into medical documentation. |

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| The use of creative writing and staged readings to foster empathetic awareness and critical thinking | 2021, Singapore and Australia | Second-year undergraduate medical students. (n=20) | Write a reflective piece on health topics such as:<br>1- The value of language;<br>2- Insights into the patient experience;<br>3- Giving voice to the patient;<br>4- Creating empathic exchanges;<br>5- Illness and emotion; and<br>6- Reflective practice. | Use of creative writing and staged readings to develop empathy and critical thinking in students | Survey Results (n = 14, 70% response rate):<br>Understanding health topics from different perspectives:<br>• 92.9% agreed that writing a creative piece helped them develop new perspectives.<br>Emotional connection through creative writing:<br>• 85.7% reported that creative writing helped to create emotional connections.<br>Improved understanding of others' perspectives:<br>• 100% agreed that listening to others' creative pieces deepened their understanding.<br>Development of narrative writing skills:<br>• 100% reported improvements in their writing and storytelling abilities. |
| AfterWards: A Narrative Medicine Program at Johns Hopkins Medicine and in China | 2023,<br>USA, China | Medical educators and clinicians | Narrative medicine workshops:<br>1- Discussion of Literature or Art:<br>Participants analyse narratives in various art forms, including literature, film, and visual arts.<br>2- Reflective Writing Exercise:<br>A prompt is provided to encourage self-exploration and connection to medical practice.<br>3- Group Reflection:<br>Participants share insights and reflections in a non-hierarchical environment. | Implement and evaluate a cross-cultural narrative medicine program | **Impact on Empathy & Reflection:**<br>Participants reported enhanced narrative competency, self-awareness, and ability to interpret patients' experiences with greater sensitivity.<br>**Professional & Personal Growth:**<br>The program provided a safe space for clinicians to reflect on their roles, engage in creative self-expression, and manage emotional burdens associated with patient care.<br>**Institutional Challenges:**<br>Limited resources, expertise, and dedicated time for participation remain barriers to broader adoption.<br>**Cross-Cultural Expansion:**<br>The introduction of narrative medicine in China aligns with efforts to restore patient-physician trust, with emerging interest in humanities-based medical education. |

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| Historical empathy and medicine: Pathography and empathy in Sophocles' Philoctetes | 2022,<br><br>Greece | Medical students | Analysis of Greek tragedy in medical education.<br><br>The study examines how ancient texts, through historical empathy, can enhance understanding, compassion, and patient care. | To explore how Greek tragedy, particularly Sophocles' Philoctetes, can contribute to the development of historical empathy in medical students and practitioners. | Engagement with literature improved students' ability to understand suffering and ethical dilemmas<br><br>Empathy and Narrative Medicine:<br>» The study discusses the evolving role of empathy in medical education, noting the increasing recognition of patient narratives as vital to patient-centered care.<br>» It aligns with the field of narrative medicine, emphasizing how storytelling enhances empathy, ethical reflection, and a deeper understanding of patient experiences.<br>Use of Literature in Medical Education:<br>» The article supports the use of classical literature, particularly Greek tragedies, to teach medical students' empathy.<br>» Greek tragedies raise universal ethical dilemmas, allowing students to explore moral conflicts and the instability of human nature.<br>Historical Empathy as a Teaching Tool:<br>» Sophocles' Philoctetes serves as a case study to illustrate how historical empathy can be cultivated.<br>The play depicts suffering, abandonment, and ethical dilemmas, all of which are relevant to modern medical practice.<br>» The emotional struggle of Neoptolemus, a young character who must decide between deception and honesty in dealing with the suffering Philoctetes, mirrors the ethical challenges faced by medical students. |

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| | | | | | Empathy Through Pathography:<br>» The study identifies pathography (patient illness narratives) as an essential element of medical education.<br>» Philoctetes presents one of the earliest recorded pathographies, portraying the suffering of a wounded, abandoned soldier in a way that evokes empathy.<br>» The protagonist's pain and social isolation reflect real-life patient experiences, making it an effective teaching tool for medical students.<br>Implications for Medical Education:<br>» The study advocates integrating historical empathy through literature to help medical students and professionals develop a deeper understanding of patient suffering.<br>» It argues that reading and analyzing texts like Philoctetes can improve students' ability to recognize ethical conflicts, relate to patient distress, and respond with compassion. |
| My Life, My Story: Integrating a Life Story Narrative Component Into Medical Student Curricula | 2022,<br>USA | First-year and third-year medical students (n = 240) | Implementation of a narrative medicine project, My Life, My Story (MLMS), where students conducted life story interviews with patients to foster empathy and patient-centered care skills. | Assess whether integrating patient life stories improves empathy and patient-centred care | **Participation & Engagement:**<br>»240 students participated: 146 first-year and 94 third-year<br>»70.7 minutes was the average time spent interviewing patients.<br>» 79% of students agreed MLMS fostered connection with patients.<br>»82% believed that life story interviews could improve patient care.<br>» 77% agreed it was a good use of time. |

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| | | | | | **Empathy Improvement:**<br>» Self-reported clinical empathy scores improved post-intervention.<br>» Significant improvements were found in recognizing patient thoughts and feelings, being attentive, and showing genuine interest.<br>» 74% of students reported the intervention made them more empathetic.<br>**Burnout & Emotional Impact:**<br>» No significant changes in burnout scores overall.<br>» A negative correlation was found between the time spent interviewing patients and burnout symptoms, suggesting potential protective effects. |

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| Insight from a novel humanities-based education intervention to teach empathy to internal medicine residents locally | 2022,<br><br>Singapure | Internal medicine residents | A humanities-based education program integrated into the internal medicine residency curriculum at Singhealth followed by semi-structured interviews<br><br>3 sessions from April 2020 to February 2021, included large-group interactive discussions facilitated by medical specialists about medical humanities, explored empathy through film and literature, and critiqued traditional history-taking methods | Evaluate impact of humanities education on empathy in residency training | **Recognition of the Value of Medical Humanities:**<br>» Residents acknowledged the importance of humanities in professional development, especially in fostering empathy and clinical communication.<br>» The humanities sessions helped trigger reflective thinking and meaning-making.<br>**Cynicism Toward the Program:**<br>» The hidden curriculum—unspoken institutional norms and behaviors—negatively impacted empathy education.<br>»Participants perceived a lack of empathy in their workplace culture, which contradicted the empathy lessons being taught.<br>»Moral distress was reported, as residents struggled to balance empathy with hierarchical and high-stress hospital environments. |

# 4. Discussion

## 4.1 Outcomes

The reviewed studies collectively highlight the significant impact of narrative medicine and visual arts training on medical students and practicing physicians, particularly in fostering empathy, emotional intelligence, and communication skills. Despite variations in methodologies and specific interventions, the findings suggest that integrating humanities-based approaches into medical education can lead to more patient-centered care and enhanced doctor-patient relationships. However, the effectiveness of these interventions was influenced by factors such as student engagement, time constraints, and institutional support. This section summarizes the primary positive and negative outcomes identified across the studies, while referencing specific works where necessary.

**Positive Outcomes:**

**Empathy Enhancement and Emotional Intelligence Development:**

Across multiple studies, participants demonstrated increased empathy levels following interventions that included narrative storytelling, role-playing, and visual arts interpretation. The "My Life, My Story" program, which involved conducting patient life-story interviews, showed that students developed stronger connections with patients, recognizing them as individuals beyond their diagnoses. Similarly, the "AfterWards Narrative Medicine Program" at Johns Hopkins and in China reported that structured patient storytelling and reflective writing helped enhance emotional awareness and reduce emotional detachment among physicians.

Moreover, arts-based training, such as Visual Thinking Strategies (VTS), enabled students to interpret non-verbal cues more effectively, which directly translated into more patient-centered communication. Studies like "Art in Medical Education: A Review" and "The Impact of Art and Reflective Practice on Medical Education in the Emergency Department" found that engaging with visual arts improved students' ability to detect subtle clinical signs, an essential skill for patient assessment.

**Improved Communication and Patient Engagement:**

Another key benefit observed was enhanced communication skills, particularly in challenging conversations involving serious diagnoses, cultural sensitivity, and end-of-life care. The “Lessons in Stories” study on pediatric palliative care training demonstrated that narrative medicine helped physicians feel more confident in discussing grief, loss, and chronic illness

with families. Likewise, the “HAPPE: A Pilot Program Using Humanities to Teach Empathy” study found that literature and role-playing exercises enabled students to develop more thoughtful responses to emotionally charged situations.

Additionally, interprofessional training programs, such as “Interprofessional Art Rounds”, showed that humanities-based education could improve teamwork and collaboration among doctors, nurses, and other healthcare professionals. The discussions fostered through art analysis led to stronger peer connections and better interdisciplinary communication, ultimately benefiting patient care.

**Reduction in Burnout and Compassion Fatigue:**

Unexpectedly, several studies reported that engaging in narrative and reflective practices reduced emotional exhaustion among students and physicians. The "Narrative Medicine Workshops for Emergency Medicine Residents" found that self-reflection exercises helped participants process emotionally difficult cases, reducing burnout and improving job satisfaction. Similarly, in "Creative Writing and Staged Readings to Foster Empathetic Awareness", students who engaged in writing and performance-based reflection found it to be a valuable outlet for emotional processing, promoting resilience in their training.

**Enhanced Observational and Diagnostic Skills:**

The "Visual Arts in the Clinical Clerkship" study found that arts-based training significantly improved students’ observational abilities, leading to greater accuracy in detecting clinical signs. This was supported by findings from "Using Visual Arts Education and Reflective Practice to Increase Empathy and Perspective-Taking", where students reported feeling more confident in assessing patient conditions based on subtle physical and emotional cues.

**Encouragement of a More Holistic Approach to Medicine:**

Engaging with the humanities encouraged students to consider the patient experience beyond clinical symptoms. The "Prism Model" framework demonstrated how a structured integration of narrative medicine, visual arts, and reflective practice could help medical students think more holistically about patient care. Similarly, the "Historical Empathy and Medicine" study, which involved analyzing Sophocles’ Philoctetes, helped students appreciate the historical and ethical dimensions of suffering and disability, contributing to a more empathetic understanding of chronic illness and patient isolation.

**Negative Outcomes**

**Time Constraints and Integration Challenges in Medical Curricula:**

One of the most frequently reported challenges was the difficulty of integrating humanities training into medical education without disrupting already demanding clinical schedules. Studies such as "Narrative Medicine Workshops for Emergency Medicine" and "Impact of Art and Reflective Practice on Medical Education in the Emergency Department" found that while residents appreciated the benefits of these programs, they struggled to commit to them due to high clinical workloads. The "HAPPE" pilot study also noted low attendance rates, as some students felt that humanities sessions conflicted with their core medical studies.

**Variability in Student Engagement and Perceived Relevance**

Several studies found variability in student engagement, with some participants deeply connecting with the humanities-based approach, while others questioned its clinical relevance. The "Empathy and Cultural Competence Remains Stable for Medical Students" study found no significant changes in empathy levels, suggesting that humanities education alone may not be sufficient to improve these skills without active engagement from students. Similarly, in "The Use of Creative Writing and Staged Readings to Foster Empathetic Awareness", some students struggled with the creative nature of the exercises, finding it less relevant to medical practice.

**Lack of Long-Term Impact Assessment**

A common limitation was the absence of long-term follow-up assessments to determine whether initial empathy gains were sustained. Studies such as "Visual Arts in the Clinical Clerkship" and "Using Visual Arts Education and Reflective Practice to Increase Empathy" reported that while empathy improved immediately after training, follow-up evaluations did not show lasting effects. Similarly, in "HAPPE" and "My Life, My Story", while students demonstrated short-term improvements in communication and patient engagement, long-term behavioral changes remained uncertain.

**Limited Clinical Application of Humanities-Based Training:**

Although humanities interventions enhanced emotional intelligence and communication, some studies found little to no direct impact on clinical efficiency or decision-making. For example, in "The Prism Model", while students developed better self-reflection and emotional awareness, the program did not immediately improve diagnostic accuracy or technical medical skills. Similarly, in "Historical Empathy and Medicine", some students struggled to apply insights from ancient literature to modern clinical practice, finding it too theoretical.

**Potential Risk of Emotional Exhaustion**

While many studies suggested that reflective practice reduced burnout, some participants expressed concerns that engaging too deeply with patient suffering could lead to emotional

exhaustion. The "Lessons in Stories" study on pediatric palliative care training found that some trainees felt emotionally overwhelmed by reflective writing about patient deaths. This aligns with findings from "AfterWards", where physicians struggled with the emotional intensity of revisiting difficult patient interactions through storytelling.

Overall, the studies reviewed highlight the promising benefits of integrating narrative medicine and visual arts into medical training, particularly in enhancing empathy, communication, and observational skills. However, their effectiveness is influenced by factors such as engagement levels, time constraints, and the absence of long-term follow-up. While humanities-based interventions offer a valuable tool for humanizing medical education, further research is needed to explore how to structure these programs for maximum impact, ensure their sustainability, and measure their long-term effects on patient care and physician well-being.

## 4.2 Unexpected outcomes

**Positive Unexpected Outcomes:**

**Increased Emotional Resilience and Burnout Reduction**

While many interventions were designed to increase empathy, several studies unexpectedly found that they also helped reduce burnout and emotional exhaustion among participants. The "Narrative Medicine Workshops for Emergency Medicine" study reported that residents who engaged in reflective writing and patient storytelling felt less emotionally detached from their work, suggesting that structured reflection may act as a buffer against burnout. Similarly, the "Lessons in Stories" study on pediatric palliative care trainees found that narrative-based discussions helped participants process the emotional weight of end-of-life care, leading to greater emotional resilience rather than fatigue.

Additionally, visual arts training interventions, such as in "The Impact of Art and Reflective Practice on Medical Education in the Emergency Department", unexpectedly provided a form of stress relief for participants. Some students described engaging with art as a break from the technical rigor of medical education, helping them reconnect with the human side of medicine in a way they did not anticipate.

**Strengthened Peer Relationships and Team Cohesion**

Several studies found that participating in humanities-based interventions fostered stronger peer relationships and created a more open, supportive environment among medical trainees. The "Interprofessional Art Rounds" study reported that engaging in art analysis discussions broke down traditional medical hierarchies, allowing doctors, nurses, and students to

communicate on a more equal footing. Participants expressed that these interactions helped improve team dynamics and interdisciplinary collaboration beyond the classroom.

Similarly, in "The Use of Creative Writing and Staged Readings to Foster Empathetic Awareness", students who shared personal narratives and performed readings together reported feeling a stronger sense of camaraderie, which in turn made it easier for them to discuss emotional challenges in their medical training. This unexpected finding suggests that narrative and arts-based interventions could be leveraged as a tool for building emotional support networks within medical teams.

### Greater Interest in Humanities and Lifelong Learning

Several studies noted that participants, particularly those initially skeptical about narrative medicine and visual arts training, developed an unexpected interest in the humanities after completing their programs. In "My Life, My Story", some students began incorporating patient storytelling techniques into their routine clinical practice, despite this not being a formal requirement of the intervention. Similarly, in "Historical Empathy and Medicine: Pathography and Empathy in Sophocles' Philoctetes", students who initially viewed ancient texts as irrelevant to modern medicine later expressed a desire to explore more historical narratives to better understand patient suffering and resilience.

A similar pattern emerged in "The Prism Model", where some students became interested in interdisciplinary learning, exploring additional coursework in medical humanities or seeking mentorship from literature and philosophy scholars. This unexpected outcome suggests that exposure to humanities-based learning may have a lasting impact on professional development, encouraging physicians to continue engaging with non-clinical disciplines throughout their careers.

### Increased Comfort with Uncertainty and Diagnostic Ambiguity

One of the most intriguing, unexpected findings came from studies involving visual arts analysis, such as "Using Visual Arts Education and Reflective Practice to Increase Empathy" and "Visual Arts in the Clinical Clerkship". Participants reported that engaging with art helped them develop a greater tolerance for diagnostic uncertainty, as they became more comfortable making observations without immediate, definitive conclusions. This skill translated into their medical practice, where they felt more confident navigating complex cases that did not have clear-cut answers.

Given that medical training often emphasizes certainty and precision, this finding highlights an important potential role for the humanities in cultivating cognitive flexibility—a skill crucial for fields like internal medicine, emergency medicine, and diagnostic radiology.

**Negative Unexpected Outcomes:**

### Emotional Discomfort and Risk of Compassion Fatigue

While many studies suggested that humanities-based training reduced burnout, some participants reported the opposite effect, particularly when engaging deeply with patient suffering and trauma. In "Lessons in Stories", some pediatric palliative care trainees felt emotionally overwhelmed when reflecting on patient deaths, indicating that narrative medicine, if not carefully structured, could increase emotional burden.

Similarly, in "AfterWards: A Narrative Medicine Program", some participants found that revisiting past patient experiences through structured storytelling exercises triggered unresolved emotional distress, leading to discussions about the need for emotional resilience training alongside narrative medicine programs.

These findings suggest that while reflective practices are valuable, they must be paired with emotional support mechanisms to prevent unintended negative consequences, especially in specialties where physicians frequently encounter patient suffering and loss.

### Resistance from Faculty and Institutional Barriers

Another unexpected challenge reported in several studies was resistance from faculty members who questioned the relevance of humanities-based training in a clinical curriculum. In "The Prism Model", some medical educators expressed skepticism about whether narrative medicine should be prioritized over traditional biomedical training, leading to inconsistent adoption of the program across different institutions.

Similarly, in "HAPPE: A Pilot Program Using Humanities to Teach Empathy", some faculty members struggled to justify the inclusion of humanities content given the already dense and time-constrained medical curricula. These findings highlight that without institutional buy-in and curriculum restructuring, humanities-based interventions may struggle to gain long-term traction.

### Differences in Cultural Perceptions of Narrative Medicine

The "AfterWards" study, which was conducted in both the U.S. and China, revealed notable differences in how narrative medicine was received across cultures. In China, some physicians were less accustomed to open emotional expression, leading to a lower level of engagement with storytelling exercises. This suggests that cultural attitudes toward emotional expression and patient relationships may shape how effective narrative medicine programs are in different regions.

Similarly, in "Empathy in Medical Education: Its Nature and Nurture", researchers found that medical students from cultures emphasizing collective well-being over individual expression responded differently to arts-based empathy training, reinforcing the need for culturally adapted approaches to humanities education in medicine.

In summary, the unexpected outcomes reported across studies underscore the complex and far-reaching impact of humanities-based education in medicine. While many findings aligned with the intended goals of improving empathy, communication, and observation skills, several studies revealed broader benefits, including burnout reduction, interdisciplinary collaboration, and increased comfort with diagnostic uncertainty. However, challenges such as emotional fatigue, faculty resistance, and cultural differences highlight areas that require careful consideration in future implementations. These findings suggest that narrative medicine and visual arts training hold great potential but must be thoughtfully integrated into medical education to maximize benefits while mitigating potential risks.

## 4.3 Most common outcomes per intervention

### Common Outcomes of both Narrative Medicine and Visual Arts Training

A review of studies on narrative medicine and visual arts training reveals distinct but complementary benefits in medical education. While narrative medicine primarily enhances interpersonal and emotional skills, visual arts training strengthens observation and diagnostic accuracy. Below is a summary of the most commonly reported outcomes for each intervention.

**Most frequent for Narrative Medicine:** Enhancing Empathy and Communication

- Increased Empathy and Perspective-Taking – Engaging with patient narratives, storytelling, and reflective writing consistently led to deeper emotional awareness and patient-centered thinking.
- Improved Communication Skills – Participants became more confident in discussing difficult topics, such as chronic illness, end-of-life care, and breaking bad news.
- Stronger Self-Reflection and Emotional Intelligence – Writing exercises and role-playing helped students process their emotions, recognize biases, and engage with patients in a more compassionate manner.
- Reduction in Emotional Detachment and Burnout – Reflective storytelling provided an outlet for stress and emotional processing, helping physicians and trainees cope with the challenges of clinical practice.
- Stronger Doctor-Patient Relationships – Physicians who practiced narrative medicine techniques built greater trust and rapport with patients, leading to higher patient satisfaction and adherence to treatment plans.

**Most frequent for Visual Arts Training:** Strengthening Observation and Critical Thinking

- Improved Clinical Observation and Attention to Detail – Training in art interpretation and museum-based exercises consistently led to better recognition of subtle physical signs, non-verbal cues, and diagnostic indicators in patient assessments.
- Greater Diagnostic Accuracy – Participants trained in visual analysis developed stronger pattern recognition skills, which contributed to more precise clinical evaluations.
- Enhanced Critical Thinking and Comfort with Uncertainty – Engaging with complex, open-ended art analysis encouraged students to consider multiple perspectives and approach ambiguous medical cases with greater confidence.
- Higher Levels of Empathy Through Art Interpretation – While primarily designed to improve observation, many studies found that interpreting emotionally expressive artwork also heightened students' ability to recognize patient distress and suffering.
- More Engaged and Reflective Learners – Participants often found art-based training to be a refreshing and stimulating learning experience, helping them develop a broader and more holistic perspective on medicine.

In conclusion, this section shows us that while narrative medicine deepens empathy, enhances communication, and strengthens patient relationships, visual arts training sharpens observation, critical thinking, and diagnostic accuracy. Together, these interventions offer a well-rounded approach to medical education, equipping future physicians with both emotional intelligence and strong analytical skills—essential qualities for high-quality, patient-centered care.

## 4.4 Bridging Findings to the Broader Context

This review confirms that empathy, communication, and observational skills are essential to high-quality patient care, reinforcing the initial argument that these competencies directly influence clinical outcomes. Research has consistently linked stronger emotional and interpersonal skills to better doctor-patient relationships, which in turn enhance patient trust, adherence, and overall healthcare results. However, these skills often decline during medical training, underscoring the need for structured interventions like narrative medicine and visual arts training to sustain and strengthen them.

### 1. Narrative Medicine: Enhancing Empathy and Patient Engagement

Narrative medicine consistently fostered empathy, improved communication, and deepened emotional intelligence. Engaging with patient narratives, storytelling, and reflective writing

made students and physicians more attuned to patient concerns, reducing emotional detachment and enhancing their ability to navigate complex conversations. These improvements strengthened doctor-patient relationships, increasing trust, adherence to treatment, and overall satisfaction—all factors that contribute to better healthcare outcomes. Additionally, many studies found that narrative medicine helped reduce burnout, reinforcing its importance not just for patients but also for physician well-being.

**2. Visual Arts Training: Improving Observation and Diagnostic Accuracy**

Visual arts training was most effective in sharpening clinical observation skills and enhancing diagnostic accuracy. Exposure to art interpretation and structured visual analysis improved attention to detail, recognition of non-verbal cues, and early identification of clinical signs. These improvements led to more accurate diagnoses and better clinical decision-making, which directly impact patient outcomes by reducing misdiagnoses and improving treatment effectiveness.

**3. Strengthening Doctor-Patient Relationships for Better Healthcare Outcomes**

With emotional intelligence and observation skills playing a key role in patient interactions, this review highlights that both narrative medicine and visual arts training contribute to stronger doctor-patient relationships. More empathetic, observant physicians build trust more easily, leading to higher patient cooperation, better treatment adherence, and ultimately improved healthcare results. By counteracting the well-documented decline of these skills in medical training, these interventions help sustain the human connection at the core of effective healthcare.

These findings validate that narrative medicine enhances empathy and communication, while visual arts training strengthens clinical observation and diagnostic reasoning. The logical progression is clear: better emotional and interpersonal skills lead to stronger doctor-patient relationships, which in turn improve healthcare outcomes. Given their direct impact on patient care and physician resilience, these interventions should be integrated as core components of medical training rather than optional enhancements. Investing in these competencies is not just beneficial—it is essential for modern medicine to advance towards more effective, compassionate, and patient-centered care.

## 4.5 Limitations of studies

While the studies reviewed provide valuable insights into the role of narrative medicine and visual arts training in enhancing empathy and interpersonal skills among medical students and physicians, several limitations must be acknowledged. These limitations, common across multiple studies, highlight challenges in methodology, participant engagement, and long-term

impact assessment. Addressing these issues in future research will be crucial for strengthening the evidence base and refining educational interventions.

### 1. Small Sample Sizes and Generalizability Concerns

A recurring limitation across many studies was the use of small participant groups, often restricted to a single institution or specialty. Given that medical training varies across schools, regions, and healthcare systems, findings from these small-scale studies may not be broadly generalizable to wider medical populations. Additionally, interventions tested in specific fields—such as ophthalmology, emergency medicine, or pediatrics—may not yield the same results in other specialties where patient interactions and emotional demands differ. The challenge of scaling these programs to large, diverse medical cohorts remains an area for further exploration.

### 2. Short-Term Assessments and Lack of Longitudinal Follow-Up

One of the most significant gaps in the research is the limited long-term evaluation of these interventions. Many studies measured empathy and communication skills immediately after training, without tracking whether these improvements persisted over time or translated into sustained changes in clinical practice. Without longitudinal follow-ups, it is unclear whether these interventions have lasting effects or if empathy levels regress to baseline once students return to high-pressure clinical environments. Future studies should incorporate multi-year follow-ups to assess whether training in narrative medicine and visual arts leads to enduring improvements in doctor-patient relationships and patient outcomes.

### 3. Reliance on Self-Reported Data and Subjectivity in Measurement

Many studies relied on self-assessment tools and subjective reflections, which introduce a risk of bias and overestimation. While students and residents often reported feeling more empathetic and aware of patient emotions, self-reported gains may not accurately reflect actual behavior in clinical practice. Additionally, there is no universal standard for measuring empathy, with different studies using varying scales and qualitative methods. Future research should incorporate objective, validated measures of empathy, such as patient feedback, direct observation of physician-patient interactions, or standardized behavioral assessments.

### 4. Lack of Direct Patient Outcomes Assessment

A major gap in many studies was the absence of patient-centered evaluation. While medical students and trainees reported improvements in their empathy and communication, few studies assessed whether patients actually perceived these changes in their interactions with trained physicians. Without direct patient feedback, it remains unclear whether these

interventions genuinely improve patient experiences, trust, and satisfaction with care. Integrating patient-reported outcome measures into future studies would provide stronger evidence of clinical relevance.

5. Selection Bias and Participant Engagement Issues

Several studies faced selection bias, as participation in humanities-based programs was often voluntary. Students and physicians already interested in the humanities or patient-centered care may have been more likely to engage, while those less inclined toward these approaches were underrepresented. This raises concerns about whether these interventions can effectively reach and benefit all medical students, particularly those who might struggle with empathy or patient communication. Additionally, some studies reported variability in engagement, with some participants deeply connecting with the material while others struggled to see its relevance to their medical training.

**6. Institutional and Time Constraints**

Many interventions faced barriers to implementation within rigid medical curricula, particularly in high-pressure specialties like emergency medicine and internal medicine residency programs. Physicians and trainees often struggled to allocate time for arts-based or narrative medicine exercises amid heavy workloads. Additionally, some institutions lacked administrative support to formally integrate these programs, leading to low participation rates and inconsistent engagement. For these interventions to be widely adopted, medical schools and training hospitals must consider ways to incorporate them into required curricula rather than elective, optional sessions.

**7. Cultural and Contextual Differences**

Some studies highlighted differences in how narrative medicine and visual arts training were received across cultural contexts. In non-Western settings, where different communication styles and patient expectations shape medical practice, Western-based humanities models may not be directly applicable. Studies conducted in cross-cultural settings found that adaptations were necessary to align with local medical traditions and patient engagement norms. This suggests that future interventions should be culturally tailored rather than relying on one-size-fits-all approaches.

**8. Emotional Burden and Risk of Compassion Fatigue**

Although many studies reported positive impacts on empathy, some participants expressed concerns about emotional exhaustion when engaging deeply with patient suffering through storytelling, literature, or role-play exercises. In specialties such as palliative care and emergency medicine, where physicians frequently encounter distressing cases, there is a risk

that heightened emotional involvement could contribute to compassion fatigue rather than resilience. Future programs should explore ways to balance empathy training with emotional self-care strategies, ensuring that physicians develop healthy coping mechanisms while maintaining their ability to connect meaningfully with patients.

While the research strongly suggests that narrative medicine and visual arts training can enhance empathy and communication in medical education, these interventions are not without challenges. Small sample sizes, short-term assessments, reliance on self-reported data, and lack of patient outcome evaluation limit the strength of conclusions drawn. Additionally, selection bias, institutional barriers, and time constraints raise concerns about scalability and accessibility in broader medical training.

To strengthen future research, studies should focus on larger, more diverse participant groups, incorporate long-term follow-ups, and integrate patient perspectives. Moreover, developing institutional support for humanities-based medical training and ensuring that programs are culturally and contextually relevant will be essential for their success.

Despite these limitations, the findings indicate that humanities-based interventions hold great potential for cultivating emotionally intelligent, patient-centered physicians. Addressing these challenges will be key to ensuring that empathy training is both effective and sustainable in the evolving landscape of medical education.

Finally, all these findings support the argument that medicine is not just a science but also an art—and that by embracing the humanities, we can cultivate more empathetic, reflective, and well-rounded physicians.

# 5. Conclusion

This review highlights the potential of arts and humanities-based interventions in medical education to enhance empathy, emotional intelligence, and observational skills among medical students and physicians. The findings suggest that exposure to visual arts, narrative medicine, and reflective practices can foster deeper patient engagement, improved communication, and a greater capacity for dealing with clinical uncertainty.

However, the studies analyzed varied widely in design, methodology, and outcome measurement, limiting the ability to draw definitive conclusions. While many interventions demonstrated positive effects, particularly in the short term, the long-term impact remains uncertain. This underscores the need for further research using standardized assessment tools and longitudinal study designs to better understand the sustained benefits of integrating the humanities into medical training.

Despite these limitations, the growing body of evidence suggests that incorporating arts and narrative-based education into medical curricula may play a meaningful role in shaping more reflective, compassionate, and perceptive healthcare professionals. Future studies should focus on optimizing implementation strategies to ensure these interventions become an integral and evidence-based component of medical education.

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